THE

AMERICAN JOURNAL

OF

PHARMACY.

APRIL, 1843.

ART. I.—ON CIMICIFUGA RACEMOSA.

By Joshua S. Jones.

(An Inaugural Essay.)

Cimicifuga Racemosa or Actæa Racemosa, (from the Greek *akte*, the elder bush, from a supposed resemblance in the foliage,) is commonly called Black Snake Root, or Cohosh. The plant belongs to the class and order Polyandria, Monogynia.

Generic Characters.—Calyx of four caducous sepals; petals four to eight or ten, sometimes wanting, caducous; carpels many seeded, dry and dehiscent or berry-like, and not opening; herbaceous; leaves decompound; flowers, in terminal racemes.

Natural order, Ranunculaceæ.

Specific Characters.—Leaves ternately decompound; leaflets ovate, oblong; racemes compound; virgate pedicils slender; petals minute; carpels dry, opening with two valves.

Description.—Root perennial, large, branching; stem four to six feet high, slender, smooth, naked, and towards

the summit leafy, near the middle with one to two radical leaves on long erect petioles; leaves triternate, petiolate; leaflets two to four inches long, and one to two inches wide, ovate, oblong, acute or acuminate, nearly smooth, unequally incised, dentate; teeth acuminate, the terminal leaflet larger, often three-lobed ; racemes terminal and subterminal, six to twelve inches long, many flowered ; pubescent; pedicils about one-third of an inch long, sometimes in pairs or branched, each with a short subulate bract at base; sepals roundish, ovate, concave, greenish white, cadaceous; petals four, white, very small, oblong, pedicellate, bifurcate at apex ; stamens numerous, white, twice as long as the ovary; fruit ovoid, somewhat compressed, dry and capsular, obliquely beaked by the short, thick, persistent style.

Habitat.—Rich woodlands; common throughout the United States. Flowers in June and July ; and the fruit ripens in September.

Observations.—The white racemes of this plant when in flower are quite conspicuous in our woodlands. The plant itself has a heavy, disagreeable odor when bruised ; the root is somewhat mucilaginous and astringent, and is a very popular medicine both for man and beast; it is used in infusion or decoction, chiefly as a pectoral remedy for human patients.

Sensible Properties.—The part of this plant used is the root, which should be dug up in July while the plant is in flower, washed clean, and dried in the shade. It is packed usually in small square bundles, and is brought into market chiefly by the Shaker Society of New Lebanon. It is composed of a head or caudex from one-third of an inch to one inch in thickness, two or three inches long; rough and knotty, caused by the remains of the stem of successive years. Externally it is of a dark brown, approaching to black ; internally whitish, breaking with a short fracture. Many radical fibres are given off in all directions; the fibres are lighter co-

lored than the main root; it is with difficulty reduced to powder. Taste mucilaginous, bitter, and somewhat astringent, leaving a sense of acrimony in the mouth; it has a fee ble odor, scarcely perceptible in the dried root; it yields its virtues to boiling water, ether, and partially to alcohol.

Medical Properties.—Black Snake Root has a tonic power united with that of a stimulating property; it has been used with much success by Doctor Young and Doctor Physick, in cases of chorea. It is chiefly used in domestic practice, in rheumatism, dropsy and various affections of the lungs, more particularly those resembling consumption. It has the property of stimulating the secretions, particularly those of the skin and kidneys.

Forms of Administration.—These are the powder, the dose of which is ten to fifteen grains; the infusion, made by pouring a pint of boiling water on one ounce of the bruised root, to be taken in the dose of a wine glass full when cold. A decoction has been recommended, but I think this mode is objectionable on account of the volatilization of the oil, and the insoluble apotheme which precipitates on cooling.

CHEMICAL CONSTITUTION.

Experiment 1st.—A decoction was made by boiling one ounce of the bruised root in a pint of water for fifteen minutes, and filtered; this was of a deep brown color. After standing a short time, a precipitate of a grayish-white color was deposited, which consisted of gum and starchy matters. With this decoction, iodine struck a deep blue tinge; gelatin produced a curdy white precipitate ; sulph. acid also produced a white precipitate. To a portion of this decoction subacetate lead was added as long as any precipitate was formed. A stream of sulphuretted hydrogen was passed into the solution to precipitate the excess of lead; it was then filtered and boiled. The solution was evaporated to the consistence of an extract, and repeatedly washed, but nothing definite could be obtained.

Experiment 2d.—An alcoholic tincture was made by macerating two ounces of the dried root in eight ounces of alcohol for fourteen days, and filtered, it was of a deep wine color. It had a bitter and nauseous taste. Upon adding water to a portion of it, a slight curdiness was perceptible. Per sulphate of iron produced a dense bluish black precipitate; upon evaporating a portion of this tincture it separated into two parts; first, a resin of a deep red color, the other soluble in alcohol and ether, not soluble in water. It was repeatedly washed with alcohol and ether, and after evaporation there remained a greasy oleaginous matter.

Experiment 3d.—An etherial tincture was made by macerating two ounces of the dried root in eight ounces of sulph. ether and filtered. It was of a light brown color, a bitter and disagreeable taste. Upon evaporation this also separated into two parts; first, a fixed oil of the consistence of thin syrup, of a deep brown color, and of bitter and astringent taste, leaving a disagreeable impression in the mouth and fauces for some time. It had an unctuous feel, and when dropped upon paper it left a permanent greasy stain. Second, upon further evaporation it yielded a waxy matter in connexion with a black coloring matter.

Experiment 4th.—A portion of the dried root was finely powdered, and moistened with warm water and subjected to heavy pressure. Some gummy matter was pressed out. This was treated with sulph. ether, but no oil could be detected. From which it is inferred that it contains oil in small amount.

Experiment 5th.—A portion of the fresh root was distilled with water; the product was a volatile oil, which came over mingled with the water, and upon standing a short time a small quantity of oil appeared at the bottom of the receiver, which was carefully removed; it possessed a peculiar odor, somewhat aromatic, and a sweet and agreeable taste; it was of a dirty white color, heavier than water and soluble in alcohol. A small portion was dropped upon

paper; it gave a semi-transparent appearance, but when exposed to the action of heat the oil was volatilized, and the paper left unstained. The water of distillation was highly impregnated with the odor and taste of the oil.

Experiment 6th.—Four hundred and eighty grains of the dried root were incinerated, and twenty grains of grayish white ashes were obtained, which were lixivated with boiling water; the filtered liquor had an alkaline taste, and restored the color of litmus previously reddened by an acid. It was neutralized with nitric acid, and spontaneously evaporated it yielded a mass of crystals possessing all the properties of nitrate of potassa.

Experiment 7th.—To the residue of experiment No. 6, dilute nitric acid was added and filtered with this solution. Ferrocyanate of potassa gave a dense blue precipitate; oxylate of ammonia produced a white precipitate.

Experiment 8th.—A portion of the fresh root was bruised into a pulp with water, the liquid was pressed out and the pulp boiled in alcohol. The solution was mixed with water and the spirit driven off by heat, but nothing was observed floating on the surface of the remaining liquid.

From the foregoing experiments the following are believed to be the constituents: Lignin, gum, starch, tannin, resin, gallic acid, fatty matter, fixed oil, wax, black coloring matter, volatile oil, salts of magnesia, potassa, iron and lime.

ART. II.—OBSERVATIONS ON SYRUP OF SARSAPARILLA.

By Thomas J. Husband.

(*Read at the Pharmaceutical Meeting of the College March* 6, 1843.)

Few medicines of such undoubted remedial powers, as are now justly conceded to belong to Sarsaparilla, have undergone so many changes in reputation. Perhaps at no period has it been more highly esteemed in this country, than at the present time. The improved formulæ for its different preparations in the U. S. Pharmacopœia of 1830, which have been observed generally by the Pharmaceutists of this city, for the past ten or twelve years, has no doubt been the means of elevating its character in the view of the medical profession, as one of our most valuable remedies in a variety of diseases. A fear that through the same channel of authority, its good character is about to be in some measure destroyed, has induced me to perform a series of experiments, for the purpose of testing the value of the new process for extracting its active properties, which has been proposed in the late edition of the Pharmacopœia, and adopted by some apothecaries; that of displacement with cold water. Having lately had occasion to prepare some Syrup of Sarsaparilla, I pursued carefully this plan, and although it yielded a syrup highly colored, and beautiful in appearance, it certainly possessed less of the peculiar acrimonous taste that characterizes all efficient preparations of this root, than is usually observed in the syrup prepared with diluted alcohol.

No. 1. Four ounces of Sarsaparilla, well bruised and macerated for twenty-four hours, was carefully treated with water by the displacement process, until the last portions of it acquired but little color. The infusion thus obtained,

amounting to two pints, was of dark color, and when concentrated by evaporation, with a moderate heat to four fluid ounces, formed a fluid extract, strongly impregnated with the peculiar taste of sarsaparilla. Eight ounces of diluted alcohol were then added to the remaining root, and macerated for twelve hours, when one pint of tincture was passed, or displaced, by further additions of diluted alcohol. This tincture was without much color, but possessed in a marked degree the peculiar taste of sarsaparilla. When evaporated to four fluid ounces, it yielded a fluid extract, richly endowed with the active principles of the root.

No. 2. Four ounces of Sarsaparilla, thoroughly bruised, and digested in two pints of water, at a temperature of about 180°, for two hours, was treated by displacement, with sufficient hot water to yield four pints of infusion; the funnel being so arranged as to preserve the temperature of 180° during the percolation of the liquid. It was then evaporated to twenty-two fluid ounces, and set aside for twelve hours.

A floculent precipitate subsided, which was collected on a filter, treated with boiling alcohol and animal charcoal, for a few minutes, and passed through a filter while hot. It was then concentrated by evaporation and set aside. When cold, the alcohol was rendered opaque, with a white floculent precipitate. The evaporation being continued nearly to dryness, by a water bath, the residuum was treated with boiling water, and filtered while hot. This presented a milky aspect, and had a very bitter, nauseous, and acrid taste. No deposit occurring by allowing it to become cold, it was concentrated by evaporation, and set aside for several hours, when there appeared on the surface of the liquid an oily substance, having a nauseous acrid taste, with a strong odor of the root; a substance also subsided having the sensible properties ascribed to sarsaparillin, or the active principle of sarsaparilla. The infusion of twenty-two fluid ounces was subsequently evaporated to eleven fluid

ounces, (the proper degree of concentration for adding sugar to form the syrup,) and set aside for several hours, when there subsided a further precipitate, similar in every respect to that collected from the twenty-two fluid ounces. This infusion, on being reduced to four fluid ounces, formed an extract stronger in appearance than the aqueous one of experiment first. Sufficient alcohol to cover the root, remaining after treatment with water in experiment second, being poured on, and macerated for twelve hours, was subjected to displacement with diluted alcohol, until one pint of tincture passed. This was evaporated to four fluid ounces, thus yielding a fluid very sensibly marked with the bitterness and acrimony of the root.

No. 3. Four ounces of bruised sarsaparilla, macerated for twenty-four hours in diluted alcohol, and treated by displacement with sufficient of the same menstruum, until twenty-two fluid ounces of tincture passed, was evaporated to eleven fluid ounces, and set aside for twelve hours. Further additions of diluted alcohol were made to the root, and subsequently water, but neither liquid had much taste of sarsaparilla, the strength having been exhausted by the first process.

At the expiration of twelve hours, no deposit having occurred in the evaporated tincture, it was further reduced to four fluid ounces, and yielded a fluid extract very much stronger to the taste than either of those previously obtained. This extract was boiled for several hours, frequent additions of water being made to supply the waste. The preparation was evidently much weakened by the treatment, and the peculiar aroma that arose from the liquid at the commencement of the boiling, was entirely dissipated. The similarity of odor between this and the oily substance spoken of in experiment second, would seem to identify them ; and that part, at least, of the activity of the root is contained in this substance may be inferred from its sensible properties being characteristic of the taste of good sarsaparilla. The

opinion may be hazarded, that this peculiar substance represents the acrid property of the root, and is distinct from the bitterness that is believed to reside exclusively in the bitter principle of the root, or sarsaparillin.

From the foregoing experiments, I am induced to believe, that water, either cold or hot, is incompetent to exhaust the root of its acrid property, unless it is used in very large proportion. For by experiment 1, we see that the quantity directed by the Pharmacopœia for making cold infusion for syrup, is quite insufficient; and by experiment 2, that even after the use of three times as much water as directed by the Pharmacopœia, at a temperature of 180°, a perceptible strength remained in the root.

From experiment 2, it appears that by the application of heat, even below the boiling point, some change takes place between the constituents of the root, so as to render insoluble in cold water or alcohol, principles that doubtless form its active properties. It is desirable, therefore, that in those preparations of this root, which are concentrated by evaporation, such a menstruum should be selected as would require the smallest quantity, and which would most rapidly evaporate at a moderate temperature.

In comparison with water, diluted alcohol is on these accounts decidedly preferable. By this also, the extraction of the strength of the root being more perfect, and no insoluble precipitate occurring by the requisite evaporation to lessen its activity, we have a concentrated solution of the active principles of the root, for forming either syrup or extract. Diluted alcohol is, therefore, free from all objection except the expense, and this should form no consideration when the strength of the preparation is injuriously affected by its disuse. This expense may, however, be in great measure avoided by distilling off the alcohol, which will then answer for further use.

Of all the writers and experimenters on the proper treatment of sarsaparilla, no one, perhaps, is more entitled to re-

spectful consideration, in a practical point of view, than Dr. Hancock, of the London, Medico-Botanical Society. His residence in the country producing the genuine sarsaparilla, gave him many opportunities of studying its character, and after much apparent attention to the subject, he arrives at the conclusion, that it is essential to employ a vinous liquor to extract the strength of the root. The established custom of the country, as regards the preparations of sarsaparilla, is to use a vinous or fermented one. From the testimony of Dr. Hancock, the powerfully curative influence of the Spanish "Jarave," or fermented infusion, would seem to establish the efficacy of the solvent, though, perhaps, such a mode of preparation would illy accord with the more refined processes of the pharmaceutic art, of our day and time.

ART. III.—REPORT OF THE COMMITTEE TO WHOM WAS REFERRED THE PAPER OF THOMAS J. HUSBAND, ON SYRUP OF SARSAPARILLA.

The subject treated of in the paper may be resolved into a solution of the following query, viz.: What is the most efficient menstruum for extracting the activity of Sarsaparilla? The author after a series of well conducted experiments, arrives at the following conclusions:

1st. That diluted alcohol is fully adequate to the removal of all the activity from Sarsaparilla.

2d. That cold water is inadequate to wholly extract the virtues of that root, because, after its action, much acrimony remains, which can then be removed by diluted alcohol.

3d. That warm water, (180° Fahr.) when applied in large quantity, did not remove all the acrimony from the root.

And *lastly*. These premises being correct, the obvious impropriety of the *second formula* of the United States Pharmacopœia, which directs the employment of cold water, by displacement, as a means of making the syrup.

Before giving a detail of the results of their experiments, the Committee beg leave to make a few statements, drawn from prominent French authority, which have a direct bearing on the subject, and which will assist in its consideration.

Soubeiran states that Sarsaparilla contains, according to the best analyses, volatile oil, salseparine, bitter acrid resin, oily matter, extractive matter, starch, and albumen.

Salseparine is colorless, inodorous, crystallizes in radiated groups, and is a neutral substance. When dry it has only a slight taste, but its solution is acrid and a little bitter. It is a little soluble in cold water, more soluble in hot

water, and its solution possesses in a high degree the property of frothing by agitation, like soapy water. It is dissolved readily by cold alcohol, but to a greater extent when it is hot, the excess of salseparine separating by cooling.

Infusion of Sarsaparilla which is odorous and sapid, loses its odor and taste when boiled for a short time, which speaks little in favor of the decoction, (see Traite de Pharm., tome ii. p. 62.) Further, when Sarsaparilla is treated with water, it is easily deprived of its extractive matter, and, if we may judge from the coloration of the liquid, it is soon exhausted ; but after the root has ceased to color the menstruum, the fluid which passes possesses the power of frothing by agitation, which is due to the salseparine it contains, the latter substance having been but partially removed from the root by the first treatment. From this circumstance it is necessary to employ very considerable quantities of fluid, and hence the method of displacement does not present any advantages in the aqueous treatment of Sarsaparilla.

Both Soubeiran and Guibourt give the preference to a syrup made with the hydro-alcoholic extract, dissolved in water. Although a solution of that extract in water deposits salseparine by standing, yet when made into a syrup, Guibourt remarks that it takes a long time for even a small deposition to take place.

We will now detail our experiments, and it will be seen that they corroborate the statements above, as well as those of the paper referred for our consideration.

Six ounces of Sarsaparilla was obtained in coarse powder, by sifting from the ground root, composed principally of the cortical portion. One half of this was macerated in eight fluid ounces of water, for three days, and then subjected to displacement, until one pint of fluid was obtained. This infusion which possessed the peculiar odor of Sarsaparilla in a marked degree, was placed in a capsule, and suffered to evaporate at a temperature varying from 120°

to 150° Fahr., to the consistence of an extract, which we shall call No. 1.

The Sarsaparilla, when removed from the apparatus and dried, was found to still possess some acrimony when chewed, and was treated with diluted alcohol until eight fluid ounces of tincture were obtained, the latter yielding by evaporation a small quantity of dry resinous extract, No. 2.

The remaining three ounces of ground Sarsaparilla were macerated in eight fluid ounces of diluted alcohol for four days, and subjected to displacement until one pint of tincture was obtained. This was perfectly transparent; but when evaporated to six fluid ounces, a few grains of dark insoluble matter precipitated, which was separated by a filter, and the clear fluid evaporated to an extract, No. 3. The root which remained possessed no acrimony.

These different products were then carefully examined, with a view to their embodying the sensible properties of the Sarsaparilla, and the Committee, with others not of their number, agreed in the correctness of the following statements:

No. 1. This extract was translucent in thin layers, dark colored and very soluble in water. It possessed the odor, bitterness and acrimony of Sarsaparilla in a considerable degree; and doubtless consisted of the extractive with more or less salseparine and volatile oil. This extract was more efficient than most of that in the shops.

No. 3. The extract prepared with diluted alcohol also had the odor of the root, but its taste was more bitter and acrid than No. 1, due to its containing all the acrid resin and salseparine of the quantity of root employed. It dissolved almost completely in water.

No. 2. This extract possessed the peculiar acrimony of Sarsaparilla more decidedly than either of the others, it being composed principally of acrid resin and salseparine, with some extractive.

One tenth of a grain of the extract No. 2, when agitated with half an ounce of water was sufficient, by long agitation, to convert all the fluid into froth. No. 3 possessed this character less than No. 2, and more than No. 1. This affords a means of judging approximatively as to the relative amount of salseparine contained in the three extracts.

The insoluble matter which precipitated during the evaporation of the tincture of Sarsaparilla, had but a very slight taste of that root, and hence the preparation is not weakened by its separation.

In making compound syrup of Sarsaparilla with diluted alcohol in the usual way, the resinous matter taken up by the menstruum from the guaiacum is nearly all precipitated, and if not separated subsequently gives the syrup an opaque appearance.

The Committee believe that if the Sarsaparilla was treated separately with diluted alcohol, and the residue with water, and the resulting tincture and infusion evaporated to the proper quantity, a more beautiful preparation would result equally efficient.

In reference to the second formula in the U. S. Pharmacopœia, the Committee would observe, that it is the same as that recommended by the committee of revision of the Philadelphia College of Pharmacy. That committee when engaged on the subject, concluded, from the results of experiments submitted to them at the time, that water was adequate to the extraction of the activity of Sarsaparilla, and that all those portions soluble in an alcoholic, and insoluble in a water menstruum, would be precipitated, when the alcohol was removed. This remark applies to the guaiacum, but to the Sarsaparilla only after standing for several days; for, although pure salseparine is but little soluble in water, yet the results of our experiments sufficiently prove that when its solution is effected by treating the root with a mixed menstruum, the alcohol may be removed by evaporation, without the salseparine immediately separating,

and the subsequent mixing of this solution with sugar, according to Guibourt, prevents it nearly altogether. This is probably owing to its association with substances which retard its crystallization, and the Committee believe that, owing to the same causes, cold water extracts and holds in solution more salseparine than if the same amount of that principle, in an isolated state, was submitted to its action. M. Beral, in a paper published several years since in the *Journal de Chimie Medicale*, strongly advocates the use of cold water as where heat is employed, the activity of the preparations suffer. (See American Journal of Pharmacy, vol. xii. p. 245.)

In conclusion, the Committee will observe that the syrup, carefully made with cold water as a menstruum, possesses in a very considerable degree the virtues of its ingredients, but they are convinced that diluted alcohol, employed as directed in the first formula of the U. S. Pharmacopœia, is the more eligible medium for its preparation, and in this they fully accord with the views contained in the paper referred for their consideration.

WILLIAM PROCTER, Jr.
A. DUHAMEL,
AMBROSE SMITH.
} Committee.

April 3, 1843.

ART. IV.—REPORT ON RHUBARB.

Extract from the Minutes of the Trustees of the College of Pharmacy, New York. Feb. 2d, 1843.

"In accordance with the resolution of the Board of Trustees, passed at the meeting in January, the Committee of Inspection offer the present report on the specimen of Rhubarb then laid before the Board.

The very respectable house in whose possession the parcel was said to be, was waited upon by two of the members of the committee, and from one of that firm the following information was obtained. That the rhubarb in question was received by them direct from Canton, in half picul cases. That another house of equal respectability received another parcel by the same vessel, and that they had every reason to believe that it was the produce of China; that the whole quantity amounted to about thirty cases, and that a portion of it had been sold at various prices, from 30 to 45 cents per pound.

As there can be no doubt as to the channel by which it found its way to this market, the only question is whether it may be French or English rhubarb, which may have been sent to Canton, with an intention to deceive by a reshipment from that port, or whether it is really the production of China. The strong resemblance in appearance, odor, and taste, which it bears to poor samples of the root of European growth would naturally lead to the former conclusion, but it must be borne in mind that all the seeds from which rhubarb has been cultivated in Europe have originally been derived from China, and it is very possible that from a desire to preserve the market to themselves, the Chinese may have furnished to the Russians the seeds of a plant growing in that country of the same family, but not of

the variety which produces the article known in commerce as China Rhubarb, and valued in medicine for properties peculiar to it alone, and in consequence the specimen laid before the Board may be the root of this plant, identical with that now cultivated in Europe, which may have been sent into the market to make up the deficiency of the supply of the genuine article, which for some time past has been reported scarce.

It is generally supposed that we are still ignorant of the variety which produces the valuable article. Seivers, an apothecary, who was sent in 1790 to Bocharia, by the Russian government to obtain that information, relates that after four years travel he was unable to obtain any satisfactory results, and that no scientific person had at that time seen the true plant; he adds, 'all that is said by the Jesuits is miserable confused stuff, and all the seeds procured under its name are false; all the plantations we have will never yield true rhubarb, and I further declare that all the descriptions in all the Materia Medicas are incorrect.'

From some experiments as to its aperient effects, the committee feel themselves authorized to say, that it probably is not more than one quarter as strong as good Canton rhubarb, and as it makes a very handsome powder, they think the trade ought to be made acquainted with the fact of its being in the market, for very probably persons who wish to sell a low priced article will grind this root and offer it for sale under the assurance that it is real China Rhubarb, which assertion they would be enabled to make from the circumstances before mentioned." All of which is respectfully submitted by your

COMMITTEE OF INSPECTION.

ART. V.—ON THE CEYLON CARDAMOM.

By Jonathan Pereira, M.D., F.R.S. and L.S.

The Scitamineous plant which bears the fruit known in commerce as the *Wild* or *Ceylon Cardamom*, and which is the produce of the island whose name it bears, has not hitherto, at least to my knowledge, been described by any botanist.

The account given by Bontius* of a plant which he calls the *Cardamomum majus* does not constitute any exception to this statement. For, in the first place, it is by no means clear that the fruit which he has figured is identical with our Ceylon Cardamom; and even admitting that it is, he must have fallen into some remarkable error with respect to its mother-plant, which, he says, is taller than a man, and has a flower like a hyacinth; and he gives a figure of it which represents a plant with a large, terminal, simple raceme. Now, neither his description nor his figure applies to the Ceylon Cardamom plant.

The hot acrid seeds known at the present day in this country, by the name of *Grains of Paradise*, are exclusively brought from the Western Coast of Africa, and are, in consequence, sometimes called *Guinea Grains*. The plant which yields them is said by Wildenow† to be a native of Ceylon, a statement which I shall presently prove to be erroneous.

The most recent writer on the Botany of Ceylon is Mr. Moon,‡ formerly Superintendent of the Botanic Garden of that island. This botanist mentions seven species of *Alpinia*, which are indigenous to, or cultivated in Ceylon. They

* Hist. Nat., p. 127.

† Species Plantarum, i., p. 9. Berolini, 1797.

‡ A Catalogue of the Indigenous and Exotic Plants growing in Ceylon. Colombo, 1824.

are *Alpinia Allughas, Galanga, nutans, sericea, calcarata, Cardamomum,* and *Granum Paradisi.* Of these, the two latter alone have any reference to the subject of this paper. His notices of them, excluding the Singhalese characters, are as follows :

2ℓ Alpinia Cardamomum, *Roxb.* Amomum repens, *Willd.* Cardamom, Kardumungu, *Portug.* Rata-ensal, *Singhalese.* Seeds esculent. *Roxb. Cor.* 3, t. 226. Kandy; cultivated. Rich mixed soil.

2ℓ Alpinia Granum Paradisi. Amomum Granum Paradisi, *Willd.* Ensal, *Singhalese.* Seeds esculent. *Rheed. Malab.* 11 t. 6. Kandy; cultivated. Rich mixed soil.

Moon's statement, that the Grain of Paradise plant was cultivated at Kandy, greatly surprised me, for I had previously ascertained that Grains of Paradise were not exported from Ceylon, and it appeared to me highly improbable that they should be wholly consumed in the island. Moreover, the omission of all notice of the plant yielding the Ceylon Cardamom (for it is well known that the *Alpinia Cardamomum* of Roxburgh is the Malabar Cardamom,) appeared to me most remarkable, and I concluded that there was some error in the names of the plants above referred to. It occurred to me that possibly the *Alpinia Granum paradisi* of Moon might, perhaps, be the Ceylon Cardamom. This notion was somewhat supported by the statement of Hermann,* that "*Ensal*" (the native name of Moon's Alpinia Granum paradisi) was the Singhalese name of Cardamom. Moreover, Gærtner† has figured the Ceylon Cardamom as the fruit called, by both Hermann and Burmann,‡ Ensal. I may observe, however, that the latter part of Gærtner's statement is not correct; for Burmann distinctly says that Ensal is the "Cardamomum minus et vulgare" of Clusius,§

* Musæum Zeylanicum, p. 66. Ed. 2d. Lugd. Bat. 1726.

† De fructibus et seminibus plantarum.

‡ Thesaurus Zeylanicus, p. 54. Amstelæd. 1737.

§ Aromat. Hist., lib. i., cap. 24.

who has figured under this name the Small or Malabar Cardamom.

In order to test the acuracy of this notion, I referred to Rheede's figure, vol. ii., t. 6., quoted both by Linnæus* and Moon as the representation of the Grain of Paradise plant. But I was both disappointed and surprised to find that its fruit bore no resemblance either to the Ceylon Cardamom or to the capsule of the African grain of paradise. It followed, therefore, either that my suspicion was unfounded, or that the reference to Rheede's figure was erroneous.

When my former pupil, the late Mr. Frederick Saner, Assistant Surgeon in her Majesty's 61st regiment, was directed to proceed to Ceylon, I requested him to procure me specimens of the plants in question, with their accompanying fruits; and in order to establish their identity as completely as possible, I begged him to obtain specimens named by the Superintendent of the Botanical Garden in Ceylon. Unfortunately, however, before I had received any communication from him on the subject, he was prematurely cut off by dysentery; but some months afterwards his botanical collections and papers arrived in this country, and among them I found three species of *Alpinia* which had been supplied by Mr. Lear, the present Superintendent of the Botanical Garden at Ceylon, whose letter, stating the names of the species, I have now before me.

The first species was marked "*Alpinia (Amomum) Cardamomum. The finest species or true Cardamom.*" This specimen was in fruit, and was therefore easily recognised to be the Malabar Cardamom *(Elettaria Cardamomum* of Maton.)

The second species was marked "*Alpinia (Amomum) Granum paradisi. Grains of Paradise.*" This speci-

* Species Plantarum. Ed. 2d. Holmiæ. In the first edition of the Species Plantarum, Linnæus did not quote Rheede's figure.

men was also in fruit, and proved to be the *Wild* or *Ceylou Cardamom;* thus establishing the correctness of my suspicion that Moon's Grain of Paradise and our Ceylon Cardamom were identical.

The third species was marked "*Alpinia (Amomum) calcarata. Cardamom only used medicinally.*" With this I have nothing to do on the present occasion.

Linnæus, in his *Flora Zeylanica*, makes no mention of the Grain of Paradise plant (*Amomum Granum paradisi, Linn.*) In the first, second, and third editions of his *Species Plantarum*, published respectively in the years 1753, 1762, and 1764, he merely gives Madagascar and Guinea as the habitats of his Grain of Paradise plant ; so that he is free from the error, fallen into by some of his successors, of regarding this plant as a native of Ceylon. The earliest edition of the *Species Plantarum*, in which Ceylon is given (erroneously) as a locality for the Amomum Granum paradisi, is that of Reichard, published at Frankfort in 1779.

But though guiltless of the error just referred to, Linnæus has committed some others with respect to this plant. His statement, that Madagascar is one of the native places of the Amomum Granum paradisi, is an error; for the Madagascar Amomum is a species distinct from that of Guinea, which exclusively yields the hot fiery seeds now sold as grains of Paradise. Moreover, the reference to Rheede's figure of "*Elettari,*" vol. ii. t. 6. of the *Hortus Malabaricus*, as the representation of the Grain of Paradise, is an error which Linnæus himself committed in the second edition of his *Species Plantarum*, published in 1762. I am ignorant of the circumstances which led him to make this mistake. It is remarkable, however, that in the same edition he also refers to the same 'plate of Rheede's work, as containing a representation of the small Cardamom plant (*Elettaria Cardamomum*, Maton.) The latter reference,

which is also made in the *Flora Zeylanica*, I believe to be correct.

Wildenow, in his edition of the *Species Plantarum*, the first volume of which appeared in 1797, adopts the errors of both Reichard and Linnæus.

Moon follows Linnæus in referring to Rheede's figure of *Elettari*, plate 6, for a representation of the Grain of Paradise. As the fruit represented by Rheede neither resembles the real or Guinea Grain of Paradise, nor the Ceylon Cardamom, which Moon regards as Grain of Paradise, I am at a loss to understand how he could have committed so gross and inexcusable an error, unless, indeed, he had not a copy of the *Hortus Malabaricus* to refer to, and, therefore, quoted it at second-hand from Linnæus and Willdenow. Linnæus probably, when he quoted Rheede's figure, had never seen the fruit of the Grain of Paradise; while Moon, though familiar with the fruit of the Ceylon Cardamom, may not have had access to the *Hortus Malabaricus* when he quoted it. So dissimilar is the fruit in question to the figure quoted, that in no other way am I able to account for the errors just referred to.

The Cardamom plant mentioned by Linnæus, in his *Flora Zeylanica*, as "Amomum scapo bracteis alternis laxis caule breviore," may have been either the Malabar Cardamom (*Elettaria Cardamomum*, Maton) or the Ceylon Cardamom (*Elettaria major*, Smith.) I am inclined to think, however, that it was the latter; for the plants were collected by Dr. Paul Hermann, who gives, in his *Musæum Zeylanicum*, *Ensal* as the Singhalese name of the Cardamom plant. Now, Moon states, that this is the native name for his Amomum Granum paradisi (*Elettaria major*, Smith.) It follows, therefore, that the synonymes "Cardamomum minus" and "Elettaria," given by Linnæus, are erroneous.

I now proceed to give a botanical description of the plant which yields the Ceylon Cardamom, premising, however,

that my specimen, from which this description is drawn, is in fruit, and does not possess any flowers. Notwithstanding this drawback to the establishment of its generic position, I have no doubt that it belongs to the genus *Elettaria*. Speaking of the fruits, Sir James Edward Smith* observes, "We are persuaded they must belong to the same genus as the Malabar Cardamom. They appear to have a similar panicled inflorescence, and the structure of the *fruit*, with its central *receptacle*, coriaceous striated valves, and angular rough or rugged *seeds*, are the same in this as in the last."—[*Elettaria Cardamomum.*] Messrs. T. F. L. Nees von Esenbeck and C. H. Ebermaier† also observe, that they are inclined to regard the mother-plant of the *Cardamomum longum officinarum* (which from their description is obviously our Ceylon Cardamom) to be either the Elettaria Cardamomum or a species closely allied to it. In confirmation of the opinion of these eminent botanists, I may refer to the rhizome, stem and leaves, which, as well as the fruit relied on by Sir J. E. Smith, have considerable resemblance to the Elettaria Cardamom. I feel myself justified, therefore, in regarding the Ceylon Cardamom as a species of Elettaria, and in adopting the specific name assigned to it by the last mentioned distinguished botanist.

Elettaria Major, *Smith, in Rees' Cyclopædia*, vol. xxxix; Alpinia Granum Paradisi, *Moon*; *Catalogue of the Indigenous and Exotic plants growing in Ceylon;* Zingiber Ensal *Gærtner De fructibus et seminibus plantarum*, t. 12, f. 5; Cardamomum majus vulgare *Clusius, Aromatum Histor.* lib. 1; Ensal, *Singhalese.* Figured in Pereira's *Materia Medica*, vol. ii., p. 1033. 2d edition. 1842.

Rhizome, with numerous branching root-fibres.

* Rees' Cyclopædia, vol. xxxix. Art. Elettaria.

† Handbuch der medicinisch-pharmaceutischen Botanik, 1er. Theil, p. 253. Dusseldorf, 1830.

Stem erect, smooth, enveloped by numerous leaf-sheaths.

Leaves sessile (or nearly so) on their sheaths, silky beneath, acuminate; the shorter ones lanceolate, the larger ones oblong-lanceolate or slightly obovate-lanceolate; breadth two to three inches, length not exceeding fifteen inches.

Leaf-sheaths about half the length of the leaves, with a roundish ligula.

Scape from the upper part of the rhizome, flexuose, jointed, nine inches long, branched; the branches alternate, one from each joint of the scape, suberect, half an inch long, supporting two or three pedicels of about three-tenths of an inch long.

Bracts solitary, sheathing, at each joint of the scape, withered, partial ones solitary, ovate, acute.

Flowers not present on my specimen. *Inflorescence* probably panicled. *Calyx* three-lobed.

Capsules lanceolate-oblong, acutely triangular, more or less curved, with flat and ribbed sides; length about 1½ inches, breadth ⅓ of an inch. At one extremity there is usually found the long cylindrical, permanent, three-lobed calyx. Each branch of the scape supports one or two capsules. Pericarp, in the dried state, coriaceous, tough, brownish, or yellowish ash colored, three-celled.

Seeds angular, rugged, with a yellowish or red hue; odor fragrant, aromatic, peculiar; flavor aromatic, spicy, but not acrid and fiery, like that of the Malaguetta pepper.

Perennial. Native of Ceylon; cultivated at Kandy. Grows in shady situations in a rich mixed soil.

The dried capsules are imported into this country from Ceylon, and are known in commerce as *Wild* or *Ceylon Cardamoms.* They are of inferior value to the *Malabar Cardamoms* (*Elettaria Cardamomum*, Maton). Thus in the *Trade List* of the 15th March, 1842, the price of

Ceylon Cardamoms is quoted at 1*s.* 0*d.* to 1*s.* 2*d.* per pound in bond, while that of the Malabar Cardamoms is quoted at from 1*s.* 8*d.* to 2*s.* 6*d.* per pound. Mastius* states, that 100 parts of the Ceylon Cardamoms consist of 71 parts of seeds, and 29 parts of pericarpial coats. By distillation the seeds yield an aromatic oil.

Bertolacci† observes, that "the cardamom of Ceylon, although held in estimation as an article of trade, is accounted greatly inferior to that which grows on the coast of Malabar, and is sold, I believe, at only one-third of the price the former. That which the island exports is collected chiefly in the Candian territory. I am informed that pepper, coffee, and cardamoms were not indigenous plants of Ceylon, but have been introduced by the Dutch." But it is probable that the latter part of this statement applies to the Malabar Cardamom only, which, according to Moon, is called by the Singhalese *Rata-ensal*, that is *Foreign Cardamom*—while the Ceylon Cardamom is simply called *Ensal*, that is, Cardamom.

The quantity of Cardamoms exported from Ceylon from the year 1806 to 1813 inclusive, is, according to Bertolacci as follows.

	Candies.
In 1806 - - -	4½
1807 - - -	15
1808 - - -	7
1809 - -	4½
1810 - - -	18
1811 - - -	9¼
1812 - - -	7⅝
1813 - - -	10⅓
AVERAGE OF EIGHT YEARS ABOUT	9½ PER ANNUM.

* Grundriss der Pharmakognosie des Pflanzenreiches, p. 254. Erlangen, 1832.

† View of the Agricultural, Commercial, and Financial Interests of Ceylon, p. 157. London, 1817.

As the Malabar Cardamom is, according to Moon, also cultivated at Kandy, it is probable that it constitutes a part of the above exports. I have not been able to ascertain the quantities exported subsequently to the year 1813.

Percival* observes, that "Cardamoms grow in the South-east part of the island [Ceylon,] particularly in the neighborhood of Matura. The seeds in taste resemble our caraways, and are used for seasoning various dishes." Moon also states that the seeds are esculent.

Pharm. Journ. and Trans.

ART. VI.—SCAMMONY AND JALAP: IDENTITY OF THEIR ACTIVE PRINCIPLES. By Henry Osborn.

It does not appear to have been noticed by any Pharmaceutical author, that scammony and jalap, which are two of the most important vegetable purgatives we possess, are identical, as regards their medicinal properties; but I am induced to conclude that such is the case, from the result of the following experiments, and will leave others to judge as to whether I am correct; for I believe it is quite time that some plan should be adopted for obtaining scammony at much less expense, as an inferior article is so often sold and purchased by those who are fond of gaining custom, by reducing their prices, which does not contain one-half as much of the medicinal property as that imported from Aleppo.

To prove this, however, it is only necessary to digest one drachm of scammony powder in rectified spirit until all the

* Account of Ceylon; to which is added the Journal of an Embassy to the Court of Kandy. 4to. Lond. 1803.

resin is taken up, which is known by its turning milky with water so long as the resin is held in solution: mix the tincture with water, and, when the resin has entirely precipitated, pour off the clear liquid and dry the resin until it is capable of being reduced to powder; in this state it should weigh from forty-three to forty-five grains; but the inferior scammony will yield only from sixteen to twenty grains from the same quantity.

The purity of jalap may also be proved by the same process: two drachms of the powdered root, having a resinous fracture, and of a brownish gray interior, gave ten grains of resin, and the light and white root nine grains.

To prove whether the scammony contained any more of the medicinal property after the resin was extracted, I took twelve grains of the residue, and no effect took place. A few days after, I took twenty grains of the extract of jalap deprived of the resin, and no action was produced. I afterwards took three grains of the pure resins of jalap and scammony in the form of a pill at different periods, and found them act as brisk purgatives, and without perceiving any difference in their strength. It may be necessary to state, that every dose was taken when the system did not require medicine, as a material difference in their effect would be the consequence if this caution were not observed, because the resins are rendered more nauseating and irritating by the presence of acid in the stomach: it is from this cause that children so often reject these purgatives. Alkalis, on the contrary, have the power of modifying the activity of resins by entirely suspending their griping effects—a fact which I proved by boiling them in a solution of soda until dissolved, and by taking a dose of each; I found nine grains of each resin, when held in solution, equal in effect to only three grains of the solid resins; their action was particularly mild, and they might be introduced into practice as a most agreeable purgative, since their taste was scarcely perceptible when taken in any of the mineral waters; imme-

diately after they were swallowed, however, an irritation was excited in the throat, which formed an objection to their use. Moreover, the resin thus held in solution is liable to be precipitated in the stomach when it comes in contact with an acid, which would increase the effect twofold.

The irritation produced in the throat is caused by a volatile oil, and the griping, by an acid ; both of which may be separated by distillation. Two drachms of the resins were put into separate glass retorts, and kept in a sand bath until all the acids and oils distilled over. The first portion, however, that came over, was only a little aromatic water, which was taken from the receiver without being allowed to dilute the acids. The oils thus produced were of a dark brown color, becoming white by redistillation, but soon returning to their former color. The acids, from the tests which I used, I believe to be nothing more than strong acetic acid impregnated with the odor of the oils. The acids and oils of both resins exist in the same relative proportions, but not in equal quantities : about one of the former to two of the latter is as near as I can recollect, having lost the memorandum since I performed the experiment—now two years since.

The fact of the alkalis diminishing the action of the resins, led me to suppose that the oils could not be very active, as the acids were separated from them, and as they could not be united and taken in the form of draught, owing to their being so exceedingly nauseous; I therefore took one drop in the form of pill; but even in that state, and being covered with silver leaf, it irritated the fauces so much, as to cause it to be rejected several times; but after it passed the throat, I only found a hot and nauseous taste, and after a short time a degree of warmth in the abdomen, with a sensation similar to that produced by a mild dose of medicine, without being sufficiently potent to carry itself off. In this experiment I was also unable to detect any difference in the strength of the two oils ; and I am of opinion, if the quantity had been a

little greater, the effect would have been the same as the alkaline solutions; but should it be doubted that the oils constitute the active principle of the resins, it may be proved by introducing a few drops in a capsule, in which manner it may be swallowed without inconvenience.

To procure scammony at a cheaper rate is the object of my publishing the foregoing; and I think nothing more would be necessary than to express the milky juice from the fresh roots of jalap, and allow it to evaporate spontaneously, which, I should imagine, would procure a larger quantity and equally pure as the scammony obtained by making an incision in the root, and allowing the juice to exude; however, this cannot be tried in this country, but I think it would be worth the attention of some individual who may have it in his power to try what I have now suggested.

The Chemist.

ART. VII.—ON GALBANUM.

By M. Ludwig.

There is some difference of opinion concerning the plants which produce galbanum, arising from the supposition that it comes from only one plant, notwithstanding that commerce furnishes two entirely different sorts.

The most common opinion relative to the origin of galbanum attributes it to the *Bubor Gummiferum*, L., *Ferula Galbanifera*, Com. Hort., indigenous to the south of Africa, and to the *Bubor Galbanum*, L., *Ferula Galbanifera*, Herm., a rather different species, frequently found in the botanical gardens of Europe.

Mr. Ludwig does not think that these are the maternal

plants of galbanum, because they do not possess the slightest odor of that gum resin.

With greater probability, this drug is attributed to the *Ferula Galbanifera*, Lobel. M. Ludwig does not think that all the galbanum is procured from this plant, but that a quantity is also yielded by the *Galbanum Officinale*, which is found in great abundance in the Levant and Syria; this origin is not yet proved, and requires to be confirmed by local observations.

Three kinds of galbanum are distinguished in commerce:—

1. Galbanum in Grains (*Galbanum in granis.*)—In separate grains, but attached to one another, from the size of a small pea to that of a nut, of a yellowish, whitish, or greenish color. The odor is strong, penetrating, and peculiar, but not disagreeable; the taste is sharp, resinous, and rather bitter; sp. gr. 1.212; it softens between the fingers.

2. Galbanum in Masses (*Galbanum in massis.*)—Large pieces of a variable color, yellow, greenish, &c., mixed with hairs and other foreign matters, or stalks and petioles.

The odor resembles that of the preceding sort, but is sometimes more penetrating; it is also of a softer consistence.

These two kinds are called by M. Ludwig, Levantic galbanum, and they are essentially distinct from the following:

3. Persian Galbanum.—Commerce furnishes it in large masses, packed in the skins of animals. This gum has a reddish brown color, with white lines; it is so soft that it becomes liquid at a low temperature. It is very impure. Its odor is quite different from that of the preceding: it is more penetrating and disagreeable, resembling that of asafœtida. The taste is disagreeable, bitter, and resinous.

From the following considerations, M. Ludwig infers

that the last kind has a different origin from the two first:—

1. The color is never greenish, but always reddish brown.

2. The odor is quite characteristic.

3. In commerce it is always more impure, and is never met with in grains, or in the state of Levantic galbanum. The *débris* of the stalks are different and thicker.

4. It is procured from another country. Persian galbanum is always received from Astracan and Oremburg, and it is the kind employed in Russia.

Levantic galbanum is imported into Trieste and Marseilles, and it has but recently been known and used in Russia.

A large quantity of Levantic galbanum, which was deposited for a long time in Hanover, where it was entirely unknown, was recognised by M. Ludwig, and it was very soon sold with advantage, having been found as good as that received from Marseilles.

Ibid.

ART. VIII.—PREPARATION OF OXIDE OF PLATINUM.

By M. Wittstein.

The author commenced by preparing sulphate of platina by dissolving platinum in nitro-muriatic acid, and by afterwards heating the mass with sulphuric acid; for 24 parts of platinum, 23 parts of sulphuric acid were taken.

The liquid was evaporated in a sand-bath, and continually stirred; a pulverulent, blackish residue was then obtained, which was entirely soluble in water. The sulphuric acid was removed by means of nitrate of baryta, and precipitation was effected by carbonate of lime, and boiling the liquor: a brown precipitate was obtained, which was washed with acetic acid, to remove the excess of carbonate of lime.

Oxide of platinum, thus prepared, is of a dull brown; it detonates when heated.

By analysing this compound, the author ascertained that it should be regarded as a bihydrate, which he represents by the following formula:—

$$Pt\,O^2 + H^4\,O^2.$$

Ibid, from Buchner's Repertorium.

ART. IX.—NEW PROCESS FOR OBTAINING THE RESIN OF JALAP IN A STATE OF PURITY AND PERFECTLY WHITE. By M. A Nativelle.

In a thesis presented to the *Ecole de Pharmacie*, in the month of July last, I pointed out a process for extracting this resin, deprived of all coloring matter; but as this process has since undergone several modifications, I have thought that it was necessary again to describe it, and that in a more detailed manner than I then did. M. Planche has already paid much attention to the preparation of this resin, which he obtained, of a very light color, by removing, as is here done by aqueous but cold solutions, the extractive matter of the roots. The process which I am about to describe therefore coincides with the ideas of that distinguished pharmaceutist.

PREPARATION.

Each root of jalap is cut into two or three pieces, and boiling water is poured on, in order to swell the roots, which would otherwise be too hard to be at first easily divided. Next day, when they have taken up nearly the volume which they might have contained in the recent state, they are cut into as thin slices as possible; water is again added. and they are boiled in a copper basin for about ten minutes, being occasionally stirred: this being done, the whole, liquid and roots, is poured into the box of a press; the deep colored liquor flows out, and the residue is submitted to a kind of pressure. Two similar decoctions are then made, being pressed each time; this precaution is indispensable for removing all the extractive coloring matter contained in the spongy tissues of the roots.

The liquors of these decoctions are rejected as useless; but they might be used for preparing an aqueous extract of jalap.

After these three treatments, the water runs out quite colorless, and there remains only pure resin fixed in the ligneous matter. It is then heated by alcohol; for that purpose, the exhausted roots, as they come out of the press, are placed in the sand-bath of an alembic; a sufficient quantity of alcohol at 65° C. is then added. Alcohol at 85° C. which was first directed, has the inconvenience of hardening the roots by removing the small quantity of water which they retain, and consequently impedes the solution of the resin fixed in the interior of the ligneous slices. The sand-bath is then covered with its head; it is boiled for ten minutes; and when the whole is nearly cold, it is pressed in the same manner as directed for the aqueous decoctions. Two similar treatments are also made, after which the roots are entirely exhausted. All the alcoholic decoctions are then mixed; the liquor which results has a very slight amber tint, which soon disappears on a small quantity of finely divided animal charcoal being stirred with it; it is filtered, and then distilled in the sand-bath until nothing passes over. The resin remains fluid at the bottom of the sand-bath, under the water and alcohol: it requires only to be dried; if, instead of operating in a tin sand-bath, an untinned copper one be used, the resin has a blackish appearance, owing to an insoluble matter mechanically contained in it. This matter, which appears to be a combination of the resin with the copper of the sand-bath, exists only in very small quantity; however, small as that quantity is, it is necessary to remove it for the resin to appear white; and as it is only interposed, it is sufficient, to separate it from the mass, to dissolve the resin in twice or three times its bulk of alcohol of 65° C., to add a very small quantity of animal charcoal and to filter. The alcohol passes off quite colorless; it is evaporated in a capsule placed on boiling water; as the al-

cohol evaporates, the resin is precipitated under the form of a thick and colorless turpentine. The supernatant water is separated, the resin is spread out on the sides of the capsule, and the heat is continued until it is perfectly dry, when it is so friable that it may easily be reduced to a fine powder. This powder is as white as starch; every kilogramme of jalap, of good quality, gives a hundred grammes of pure resin; a result which agrees very well with the quantitative analysis. This resin has been tried; it is as active as that obtained by the other processes, by which it is not produced in the white state. Three decigrammes, suspended in half a glassful of milk of almonds, acted as a powerful purgative. in the dose of even two decigrammes, its action was almost as energetic. Reduced to powder, and put in contact with cold water, it presents the peculiar characteristic of forming a semi-fluid, transparant mass, as if it had been melted; it has the same appearance as resin which has just been precipitated by water from its alcoholic solution. Under this form, it would seem to re-constitute a hydrate, by again taking up the water which it had lost by desiccation; however, this character may be used to a certain point for distinguishing the resin of jalap from other resins, which remain pulverulent during their contact with water. If a certain quantity of colophane be mixed with resin of jalap in powder, and treated by water, the whole mass combines, but with an opaque appearance, occasioned by the colophane, which, as it cannot be incoporated with water, remains interposed in the middle of the mass. However, this character would not be sufficiently accurate for determining a small quantity of foreign resin put in for the sake of sophisticating the pure resin. By an analogous means, the other resins, which, like that of jalap, are entirely insoluble in water, might be extracted.

Ibid, from Journ. de Pharm. et de Chim.

ART. X .—INVESTIGATIONS CONCERNING A RESIN EXTRACTED FROM BALSAM OF COPAIBA. By M. Fehling.

The author examined a slightly crystalline deposit formed in balsam of copaiba of good quality. He determined the composition of this resin in the hydrated and anhydrous states. Its atomic weight was deduced from the combustion of the salts of lead and silver. By analysis, it gave the following results.

HYDRATED RESIN.

		Atoms.
C.	= 72.345	C^{40}.
H.	= 9.022	H^{60}.
O.	= 18.633	O^{8}.
	100.000.	

ANHYDROUS RESIN.

C.	= 76.274	C^{40}.
H.	= 8.805	H^{56}
O.	= 14.921	O^{6}.
	100.000.	

The resin is isomeric with the oxysylvic acid of Hess, which contains—

C.	= 72.14
H.	= 8.74
O.	= 19.12
	100.00

This resin, treated by nitric acid, gave rise to two pro-

ducts; one soluble in water, and containing no nitrogen; the other insoluble and nitrogenous.

Finally, the resin evaporated to dryness with nitric acid produced a black mass, which, treated by alcohol, left a residue insoluble in water and soluble in alcohol, which the author compared with ulmic acid. This matter contained 65.47 of carbon and 5.43 of hydrogen. *Ibid.*

ART. XI.—THE VEGETABLE IVORY, OR TAQUA PLANT.

(*Phytelephas macrocarpa.* Willdenow.)

By Mr. Smith.

This tree, which resembles a palm, grows in the hot low valleys of the Peruvian Andes. The fruit at first contains an insipid and limpid fluid, with which travellers quench their thirst; afterwards the liquid becomes milky and sweet, but increases in consistence till it becomes solid as ivory. The taste varies; if the fruit be cut off while soft, and filled with fluid, the liquid becomes sour if kept long. Of the nuts the inhabitants form handles for knives, spindles, and other ornaments, which are whiter than real ivory, the color and hardness of which they retain, provided they be not kept too long under water; but even then, when dried, they again become white and hard.

The Indians cover their cottages with the largest leaves, and the English manufacture all kinds of fancy articles with the nut, which in color supersedes the elephant ivory.

Pharm. Journ. and Trans.

ART. XII.—INDIA-RUBBER COURT-PLASTER.

By Mr. B. C. Rowland.

The Pharmaceutical Journal, No. IV., 1st Vol. contains an article detailing the manner of making Mr. Liston's isinglass plaster, spread either upon silk or membrane. I am induced to lay before your readers, in furtherance of the same subject, the best method of making India-rubber Court-plaster, *which does not wash off;* thinking, as it has become an article now in general use, that the mode of its preparation may interest the Chemist and Druggist.

A stout frame of wood must be made about three yards long, (or any length that would be most convenient,) and about one yard and a quarter wide. Within this frame must be placed two sides of another frame running longitudinally and across, so fixed in the outer frame that the two pieces may slide, independently of each other, backward and forward about six inches.

Tapes of canvass must be tacked round the inside of the inner frame and the corresponding sides of the outer frame, so as to form a square for the material to be sewed in; which when done, the two loose frames must be drawn tightly to the outer, by means of a twine passed round each, in order to stretch, perfectly free from irregularities, the silk or satin previous to laying on the composition.

To make the India-rubber plaster:—Dissolve India-rubber in naphtha, or naphtha and turpentine, and lay it on with a brush, on the opposite side to that intended for the plaster, and when perfectly dry, and the smell in a great measure dissipated, it will be ready for the adhesive material; to make which—take equal parts of Salisbury glue, or fine Russian glue, and the best isinglass, dissolved in a suffi-

cient quantity of water over a water bath, and laid on with "a flat hog-tool" while warm. It is requisite to use great caution in spreading the plaster evenly, and in one direction, and a sufficient number of coatings must be given to form a smooth surface, through which the texture of the fabric is not perceptible. Each coating should be perfectly dry before the succeeding one is given, and placed in a situation free from dust, and where a draught of air would facilitate the drying. The quantity of water used, and the weight of the two materials, must be a little varied according to the season, and the gelatine strength they possess.

Lastly, the plaster being ready to receive the polishing coat, which gives also the balsamic effect to it—a preparation is made in nearly the same manner as the tinctura benzoini composita of the Pharmacopœia, with the addition of more gums; this preparation must be laid on once only, and with a brush kept for the purpose. For making plasters on colored silk, it is only necessary to select the silk a shade deeper than the color required, as the plaster causes it to appear a little lighter.

The process being finished, the plaster must be cut out of the frame with scissors, as near to the canvass to which it is sewed as it will admit. For sale, it is cut up in squares, which is best done by means of a compass and rule.

I have tried various solvents for India-rubber, and find none answer so well as those above mentioned. Ether dissolves it with facility, and possesses the advantage of cleanliness, but it is much more expensive, and evaporates so rapidly, that it is almost impossible to spread the solution smoothly on the silk; naphtha evaporates more slowly, and is, therefore, preferable, but the quality requires attention, as it may be obtained almost free from that kreasote smell which is the only objection to its use. The addition of a small quantity of spirits of turpentine facilitates the solution of some specimens of India-rubber. The white In-

dia-rubber is better than that which has assumed a black color by exposure to the air.

I have tried various adhesive materials, but find the one I have mentioned to be the best. The grand arcanum in making court-plaster is *glue* and *isinglass.* The polishing coat is not absolutely necessary, but it improves the appearance of the plaster, and the gums may probably increase its healing property, and by giving it a more even surface cause it to adhere more closely. It has occurred to me, that a similar plaster might be made for common use with calico instead of silk, which might, in some cases, supersede the use of strapping; and also that the adhesive material might be made the vehicle for cantharidine or other stimulants. The isinglass plaster is apt to crack in warm dry weather, but this does not occur if it is kept in a cellar in an earthenware jar. *Ibid.*

ART. XIII.—HISTORY OF PHARMACY—A FRAGMENT.

By Mr. Cap.

(*Translated by Augustine Duhamel.*)

I. SCHOOL OF ALEXANDRIA.*

Distribution of Medicine into three professions.

The flourishing state to which the sciences were elevated in Greece, by the labors of the Peripatetic school, and the protection of Alexander, could not continue a long time. After the death of the King of Macedonia his empire was dismembered. In the division, Egypt fell to the lot of Ptolemy Soter, son of Lagus and brother-in-law of Alexander, who had contributed to his conquests and partook of his taste for philosophy and the sciences. Ptolemy founded at Alexandria the *Museum*, a vast depot, where he reunited the natural productions of all the then known countries, and collected a considerable number of manuscripts with which he formed an immense library.

Ptolemy Philadelphus, who succeeded to Soter, further enriched these precious collections. The library established in the temple of Serapis became enriched with all the works which he caused to be bought at Athens, Rhodes, and throughout Greece.

He likewise gathered together a large number of strange living animals, with which he formed a menagerie.

The kings of Syria and Pergamus rivalled with the Ptolemies in the encouragement which they gave to *savants* and philosophers. This rivalry was carried so far that Ptolemy prohibited the exportation of papyrus, in order to take

* This article forms the second chapter of Book Second of a *History of Pharmacy*, at which the author has been working for several years.

from their competitors the means of carrying off their literary treasures.

It was then, and during the reign of Eumenes, King of Pergamus, that parchment was invented.*

Alexandria soon became the centre of civilization, the sanctuary of knowledge, and the rendezvous of philosophers and *savants*, who flocked thither from all quarters, attracted together by the resources presented for instruction, and the liberality of sovereigns, as well as by the beauty and salubrity of the climate.

Distant expeditions having multipled the relations with the East, and the commerce of the Egyptians being considerably extended, Alexandria became at the same time the great commercial mart of the civilized world, and the natural route by which the productions of India, such as drugs, spices, and medicines, arrived in Europe, furnishing immense materials for the study of naturalists. This glorious and prosperous condition existed for nearly two centuries, under the dynasty of the Lagides.

The majority of the princes of this family made themselves remarkable by their taste for erudition and their scientific researches. Evergetes second, and seventh of Ptolemies, (or rather the eighth agreeably to modern discovery,) a disciple of Aristarchus, cultivated the natural sciences with success, and wrote a treatise upon animals. It was under his reign, however, that the prosperity of the Alexandrian school was arrested. Having excited his subjects to rebel against him, this cruel prince was obliged to retire to the Isle of Cyprus; repossessed of his estates, he perpetrated such acts of vengeance that Alexandria soon became a desert. The persecution operated chiefly upon philosophers, *savants* and physicians, who abandoned Egypt and retired to Athens, where they revived for a time

* It is evidently from the word *Pergamus*, that *parchment* borrows its name.

the culture of letters and sciences. Others retired to Laodicea where they established a medical school in the temple of Carus. Although such concurrent circumstances singularly favored the perfection of sciences in the school of Alexandria, yet all the results that might be anticipated were not realized.

Natural history could not acquire much from this prodigious quantity of books, collected with more haste than choice, and which frequently diverted the erudite from applying themselves to experimental researches. The study of nature even took a false direction. The peculiar taste of the Egyptians for the marvellous led them to study merely those substances presenting something extraordinary or singular: from thence come the numerous works *de mirabilibus*, dating from this epoch, and in which they too often digress from the truth.

The Ptolemies had also established an Academy where learned men were lodged and entertained, likewise literary solemnities called *Musarum et Apollinis ludi.*

These conventions, where the genius of speech shone more prominently, gave rise to fewer *savants* than orators and sophists; furthermore, encouraged by the value attached to books, scholiasts and commentators abounded; it is likewise to this epoch must be ascribed most of the alterations, interpolations in the text of manuscripts, and those numerous apocryphal works amongst which it is difficult to recognise authentic or original writings.

Neither did the medical sciences make great progress in the school of Alexandria. Yet this school was then the only one where knowledge to a certain extent could be acquired; such physicians having belonged to it as Erasistratus and Herophilus, whose names, as well as a number of their scholars, are interwoven with the history of Materia Medica and Pharmacy.

Erasistratus, according to Pliny, was the grandson of Aristotle, by his mother's side. He had attended the lec-

tutes of Theophrastus. He lived at the court of Seleucus Nicanor, King of Syria; it is well known that he discovered and succeeded in curing the disease of Antiochus, son of this prince, who was smitten with a violent passion for Stratonice.

Erasistratus was the author of a work on poisons. Although he was the first, according to Galen, to employ castoreum and several other active medicines, yet he labored to simplify the use of remedies, and censured those physicians who made a lamentable abuse of their complication. He particularly opposed *antidotes** and compositions called *Royal*, which the doctors of his time styled *hands of gods*, (*manus deorum.*) He rarely used other than external remedies, and had a decided predilection for chicory, pumpkin, barley tea, cups, and especially *hydrœlum*, a mixture of water and oil, which he employed for injections and fomentations in inflammatory diseases.

Herophilus of Chalcedon, in the employment of medicines, professed a doctrine entirely opposite to that of Erasistratus. He used a great deal of hellebore, and attributed powerful effects to vegetable substances. He wrote upon Botany, and gave by his example a great impulse to the study of Materia Medica. It was especially in reference to him that Erasistratus condemned the abuse of medicines, because Herophilus had been the first to say that when properly employed they might be looked upon as the *hands of gods*. The majority of Herophilus' students were occupied with the Materia Medica; among them may be cited :

Endemus, who compounded a theriac, the formula of which was preserved by Galen. The composition of this, described in verse, was engraved upon the gates of the Temple of Esculapius. Antiochus Philometor employed it daily.

Mantias, is another pupil of Herophilus, who wrote a trea-

* From αντι, against, and δοτος, given; given against.

tise upon the preparation of medicines. This work, quoted by Galen, has not yet reached us.

Apollonius, of Memphis, who left a work upon Botany, and several formulas for medicinal compounds, of which he was the inventor.

Zeno, of Laodicea, who devised a large number of pharmaceutic compositions. One against colic, bearing the name of *diastæchados** was much lauded. Galen cites several other antidotes of his invention.

Apollonius, of Mysia or Citium, another Herophilite, who wrote an essay upon ointments (περι μυρων;) a second upon the *euporistes* (medicines easy to procure,) and a third upon antidotes.

Andreas, of Caristum, the author of a work upon the properties of medicines entitled *Nartex*,† and another upon poisons. He invented several collyriums, contested the fabulous opinion of the coupling of the asp with the *nuræma*, and pointed out several changes which commercial opium underwent at Alexandria.

None of the works upon medicine of this school lived beyond the age. The fury of Omarius alone did not destroy the vestiges; in the time of Julius Cæsar, the library belonging to the palace of the Ptolemies, was consumed by fire; it enclosed, as it is said, 400,000 volumes. But that of the temple of Serapis continued to exist, and Marc Antony enriched it by giving to Cleopatra those of the Kings of Pergamus, which, according to Plutarch, increased it to more than 200,000 volumes.

It was in the Alexandrian school that was wrought, for the first time, the distribution of the professions appertaining to medical art; this division was induced, as Sprengel‡

* Of which the *stæchas* (Lavandula stæchas, L.) was the base.

† The Greek word ναρθηξ signifies switch, stick, thyrsus, *ferule*, and also box. It was as the arsenal of medicines. This name has been since given to several other collections of formulas.

‡ Histor. rei herb. Vol. i. p. 121.

thinks, either by the idleness or opulence of the physicians, who abandoned to subordinates a part of their duties, or else the continual branching off from the expanse of the knowledge relating to medicine, shewed the necessity of separating them in order to render the study easier, and its application more profitable. Celsius has saved to us some curious documents,* from which we shall extract that which particularly concerns the attributes of pharmaceutists.

The practice of medicine was divided into three branches. The first treated chiefly of diseases by diet; this was *Dietetics:* the second by the use of medicines, which they called *Pharmacy:* and the third consisted of operations by hand, which was *Surgery.*

It may be conceived, nevertheless, that these three branches were not separated in such a way that the one should never encroach upon the dominion of the other. It is evident that dietetics would frequently call to its aid the two other professions. Surgery, however, took up solely with that which required a manual operation. It could not even treat sores, ulcers, and tumors, which called for the application of medicines.

It was reserved for the *Pharmaciens* to treat these kinds of affections, except where they were obliged to have recourse to the knife or fire, in which case only was the surgeon called. Previous to the division of the medical professions the duties of the whole were fulfilled in the one. There were, however, two classes of physicians; the most learned, and consequently the most esteemed, went by the name of *architectes*, Αρχιτεκτονικοι, and gave the orders and advice which the others executed.

These latter were the *manœuvres*, δημιουργοι, and were those who practised both surgery and pharmacy. The word *vulnerarius* applies as well to one as the other.

Those who exercised *pharmacy*, or the *medicine of*

* De Re Medica.

medicines, were called *pharmaceutæ*. The word *pharmacopœus* is taken in wrong sense, and signifies a poisoner, for the word φαρμακον is applied to all sorts of useful or baneful drugs. The Latins understood alike by the term *medicamentum*, a medicine or a poison. The word *pharmacopola* designated another profession: those were so styled who sold medicines, though they did not prepare them. They had likewise applied to them the terms *circulatores*, *circuitores*, *circumforanei*, in Greek περιοδευτοι, which corresponded to the word charlatan, and *agyrtæ*, αγυρται*, because the people collected around them. Those who kept an open shop were styled *sellularii*, επιδιφριοι ιατροι, or sedentary doctors. It is the profession which Aristotle exercised, also Eudemus and Chariton, mentioned by Galen, and very likely Galen himself: finally, this is the pharmacy we now find practised in England.

The *pharmaceutribæ*, those who mixed, pounded, or ground drugs, were probably identical with the *pharmaceutæ*. They compounded remedies, but did not apply them. The druggists went by the name of *seplasiarii*, *pigmentarii*, in Greek παντοπῶλαι, κατωλικοι and μιγματοπῶλαι. They sold drugs for medicinal use, as also for use of painters, perfumers and dyers. The shop or store where the drugs were contained was called *seplasium*, and the profession *seplasia*. Pliny already spoke of alterations and sophistications which medicinal substances underwent in the hands of the druggists, and the carelessness of physicians who neglected to examine or prepare the medicines themselves.

Several centuries after Celsius, the *pigmentarii* from being druggists at first, became regular apothecaries, or at least arrogated to themselves their privileges. The ordinary plants were sold by the herborists, *herbarii*, in Greek ριζοτομοι, *root cutters*, or βοτανικοι, *who gather herbs*. The

* From αγυρο to assemble.

rhizotomes who collected roots affected to gather them with superstitious ceremonies, and made no scruple about substitutions. The *rhizotomes* and those exercising pharmacy, had stoves appropriated to their use. They were called *apothecæ*, (αποθηκαι,) a general name for stores or depots of merchandize, from whence the Italian *Botega*, the French word *Boutique*, as well as that of *Apothecary*. The surgeons had likewise shops bearing the name of *medicinæ*, a generic term applying to all those places where a profession was exercised depending upon medicine. They also assigned to the shops of the dyers the name of *pharmacon*. Those of the *pharmacopolæ* styled themselves *pharmacopolia*.

Those of the perfumers or venders of ointments, which were termed *myrepsi* from the Greek word μυρον, took the title of *myropolia* and *myrothecia*. Lastly, they gave to the barber's shops the name of κουρεια, and in Latin that of *tonstrinæ*.

This distinction between the medical professions was never very decided nor persistent. It appeared to have but a momentary existence, for it was quite obliterated among the Romans, and its traces only discovered about the era of the revival of sciences and letters.

Shortly after Celsius, physicians resumed the ancient custom, and practised themselves, or by deputies through their orders, exercising all the branches of the medicinal art. They continued alone to write upon every branch of medicine, pharmacy in particular. Works upon this subject were still very rare, the collections of receipts very select, and they imparted to libraries considerable value. Materia Medica, however, was enriched by a large number of active substances, perfumes, spices and aromatic drugs, obtained from divers countries, the depths of the Indies and Ethiopia.

About this epoch a knowledge of the sugar-cane com-

menced, the fabrication of which remained crude for a long time, but gradually superseded honey as a condiment.

Herophilus gave a great impulse to the employment of medicines; his scholars, according to custom, exaggerated the doctrine of the master. But out of the same school there soon arose a new sect, that of Empirics, which was to give to the Materia Medica a new activity, and a better guide to the study of medicines. Happy, indeed, if this reform had not been the source of deplorable abuses.

II. THE EMPIRICAL SCHOOL.

Serapio, Mithridates and Nicander,—The Kings of Pharmaceutists.

The origin of the Empirical school may be attributed to many circumstances concurring at once; but, in the ignorance of any other fact, to a kind of revolution in the medical sciences. Thus it was that the steps towards perfection in anatomy, and the objections that it raised, as opposed to the principles of the dogmatic school—the influence of Pyrrho's system of philosophy, then much in vogue; and lastly, the introduction into therapeutics of numerous new medicines imported through commerce, cast at once confusion among the established doctrines, and began to divert physicians from the path which Hippocrates had traced by observation.

Philinus, of Cos, pupil of Herophilus, was the first to build up a system of uncertainty in medical theories, and to propose an exclusive reliance upon experience in the treatment of diseases. Serapio, of Alexandria, his successor, gave still further extension to this system, and laid down the principle not to admit but that which is evident, to reject all hypotheses, and even every investigation into the hidden cause of diseases. It is evident that the study of medicines was to be the base of this new method; accord-

ingly the Empirics betook themselves to experimenting *a priori* upon all the substances with which the Materia Medica was recently enriched. Unfortunately, they did not always employ a good method of observation; instead of studying the isolated action of each substance, they associated them in complicated formulas. Since such a medicine had succeeded in a simple case, they thought that two substances combined ought to act simultaneously, in an affection occupying a double stage; and as in certain diseases numerous symptoms are observed, they imagined that a preparation containing all the drugs capable of acting individually upon them would be perfectly efficacious, trusting as Dr Le Clerc wittily remarked, that the physic would be more serviceable than the physician. Hence the origin of the digression into which the empirical class were led away, and of that polypharmacy, the abuse of which, to begin with this epoch, grew up and extended itself from century to century.

Serapio employed himself actively in the study of medicines; he collected together all the formulas, the virtues of which were sanctioned by popular usage.

Ætius, of Amidus, and Nicholas Myrepsus, have handed down to us a number of preparations, of which Serapio was the inventor. We know, likewise, that he made use in cholera of pills composed of hyosciamus seed, aniseed and opium, a formula very analogous to the means latterly employed against this terrible scourge. In the iliac passion he made use of a composition into which *gnidium* berries, (the daphne mezereum) entered; also, salt, elaterium, resin, castoreum, and diagrede.* This is the first example of the employment of the last named substance.

For tetter, and some diseases of the skin, he made use of a mixture of nitre, sulphur and resin. Finally, it appears

* Preparation of Scammony, the name of which comes from *dacrydion*, tear, because this resin being melted takes the form of a tear.

that already at this epoch they believed in the efficacy of certain foreign superstitious remedies in epilepsy, as Serapio recommended in this case, in addition to castoreum, the employment of which still continues, the brain and gall of the camel, the rennet of the seal, the excrements of the crocodile, the heart and kidneys of the hare, turtle's blood, and ram's testicles, or those of the bear, cock, or wildboar. It is to Cœlius Aurelianus we owe these details.

Apollonius, of Antioch, wrote a treatise upon the preparation of ointments, and another upon the composition of extemporaneous medicines.

Heraclides, of Sarentum, a student of Mantias, greatly improved the Materia Medica, and was the author of a complete work upon medicines. This book is lost at the present day. He likewise interested himself with antidotes. Cicuta, opium, and hyosciamus were the bases of these antidotes, the experiments of which he always made upon himself.

Opium was one of his favorite remedies,* also some of the then newly imported Eastern aromatics, such as the costus, long pepper, canella, opobalsamum, and assafœtida.

Cleophanthus, who was the preceptor of Asclepiades, left behind him a learned description of medicinal plants. Lopyrus, who resided at the court of the Ptolemies, prepared an antidote to which he gave the name of *Ambrosia.* Galen says that he suggested to Mithridates to make a trial of it upon a criminal who should be previously poisoned, assuring him that his antidote would destroy the effect of

* The origin of opium is unknown. If it is true that under the name of *nèpenthés* it was intended to designate the juice of poppy, the discovery of its calming property would be carried back to a great antiquity. Hippocrates speaks of the poppy juice, and the poppy itself, as being somniferous. Diagoras, who was the slave of Democrites, and consequently contemporary with Hippocrates, cited *opium* as a dangerous thing in inflammations of the eyes and ears. The empirics repudiated this statement and encouraged its use.

the poison. He was the first to have the idea of a classification of medicines arranged in the order of their properties.

Cratevas, a celebrated botanist, wrote a work upon plants, having for its title, *Rhizotomoumena.* He added to his description of vegetables, drawings representing them. The manuscript of this work still exists in the library of St. Marc, at Venice. An interesting circumstance to prove for the history of Pharmacy, is that during two or three centuries, whilst sciences flourished in Egypt and Asia Minor, almost all the sovereigns gave their attention to medical studies, especially pharmaceutic researches, and that their discoveries throw some light upon the doctrine of poisons and counterpoisons.

We have spoken of the encouragement afforded to natural sciences by the Ptolemies, and the individual labors of several princes of this family. Antiochus Philometor,—Nicomedes, King of Bithnyia,—the Queens Cleopatra and Artemisia,* the Kings Attalus and Mithridates, not only cultivated the medical sciences, but invented and compounded medicines themselves, to which they did not disdain to give their names.

To Agrippa, King of Judea, is attributed the invention of the ointment bearing his name.†

* It is pretended that Artemisia, Queen of Caria, and wife of Mausolus, gave her name to the mugwort, (Artemisia Vulgaris, L.) It is at least equally probable that the name of the genus comes from the Greek Αρτεμις which was one of the surnames of Diana, patron of virgins, by reason of the known efficacy of this plant in certain affections of the uterus.

† The name of this preparation could as likely be attributed to the word αγριππον, which among the Greeks meant *juice of the plant.* Suidas asserts that at Sparata the same word served to designate the wild olive. Olive oil, as well as the juice of a number of plants, entered, in fact, into the composition of the ointment of *Agrippa.*

Attalus Philometor, King of Pergamus, was celebrated for his knowledge of botany and pharmacology. He himself cultivated hyosciamus, aconite, cicuta and hellebore, in his gardens, and made a number of experiments upon the activity of these plants. Galen and Marcellus Empiricus refer to two remedies bearing his name; one, a plaster, of which white lead is the base, the other an internal remedy for jaundice.

Without question, the most celebrated of these pharmaceutic soverigns was Mithridates Eupator, King of Pontius, the implacable, and so long successful, rival of Roman power. His cruelty and violent passions, which raised against him so many enemies, had wrought upon him such a fear of being poisoned, that he made the most prying searches, in order to know every thing that appertained to toxicology. He experimented upon criminals, as also upon himself, with poisonous substances, and daily took a certain quantity of poison with its antidote. He so accustomed himself to the use of poisons that at the moment of his last defeat, wishing to use some upon himself which he always carried about him, he could not succeed in destroying himself by this means. We are assured that having been wounded in battle, the Agares, people of Scythia, had him cured by remedies into the composition of which the venom of the serpent entered. From thence, probably, arose the interest which he attached to the study of poisons and animal venom. Upon the subject of venoms he wrote a work, to which he gave the title of *Theriaca.**

Mithridates is particularly celebrated in medicine as the author of an electuary, the formula of which still figured not long ago in all the Pharmacopœias, and to which he attached great importance as an alexiteric. This composition was so famous, that one of the first cares of Pompey,

* From the word θηρια, venomous beast.

after the death of Mithridates, was to cause it to be sought for among the papers of this prince.

They, in fact, found the formula amidst private memoirs, which for the most part had relation to medical observations, explanations of dreams, and pharmacological researches. Independently of the formula of this celebrated electuary, they found another which they considered as his true counterpoison. It is composed of the leaves of rue pounded together with salt, the kernels of nuts and ripe figs.*

Pompey hastened to translate, through his manumitted slave Lœnus, all the books of receipts belonging to Mithridates, and brought them to Rome as one of the trophies of his victory. The decided taste of Mithridates for pharmaceutical knowledge naturally turned the mind of his contemporaries to analogous researches, and evidently contributed to the progress of Materia Medica. Nearly all the empirics founded their glory in devising new compounds and new antidotes to which they affixed their names. Cratevas dedicated to Mithridates his work upon vegetables, and gave the name of this sovereign to two plants; one is our agrimony, (*Agrimonia Eupatorium, L.;*) the other is the *Mithridatium*, (*Erythronium dens canis*, L.) Pliny mentions a Babylonian by the name of Zachalias, who dedicated to him a work upon precious stones.

The electuary of Mithridates is composed of fifty-four substances; it was the most complicated of all the antidotes then known. It is known that the celebrity of this composition existed for nearly twenty centuries; it only ceased since a few years past to be an article of our dispensatories,

* Bis denum rutæ folium, salis et breve granum
Juglandesque duas totidem cum corpore ficus,
Hoec oriente die pauco conspersa Lyæo,
Sumebat. . . . . .

(2. *Serenus Sammonicus.*)

though it still figures in some of the foreign Pharmacopœias. Linnæus gave the name of *Eupatorium* to a genus of the family Synanthereæ, and Vaillant to another genus of the same family, under the name of *Eupatoriophalacron*. The learned Meibomius has written a voluminous dissertation upon the Theriac and electuary of Mithridates.*

The empirical school includes still some physicans, whose names, under some title, belong to the history of Pharmacy.

Hera, of Cappadocia, left like Andreas of Caristum, under the name of *Nartex*, a work relative to Materia Medica and medicinal preparations. This work embodies a description of every remedy that he had himself proved to possess some virtue. He was the inventor of an antidote, a formula of which Galen has recorded: the same author quotes from Hera, of Cappadocia, some remarks upon the preparation of ointments. But of the empirics, the one who should especially awaken our interests, on more than one account, is Nicander, son of Dammæus, native of Colophon in Ionia, contemporary with Attalus III, Scipio Africanus, and Paul Emilius. Nicander had been an Apollonian priest at Clarus. He distinguished himself in the same time as a poet, physician, and naturalist. He was the author of several poems, all having some bearing upon the natural sciences and Materia Medica. The one entitled *Georgica* treated of Agriculture, and was dedicated to *Attalus Philometor*, the last King of Pergamus, who declared the Romans heirs of his kingdom. Cicero† speaks with eulogy of this work, which thus far has not been handed down to us.

There remains to us at the present day only two poems of Nicander, which are devoted to natural history and toxicology. The first is entitled *Theriaca:* it contains the

* Under the title: *De Mithridatio et Theriaca discursus.* Lubeck, 1652: in 4to.

† *De Oratore*, lib. i. cap. 16.

description of serpents and venomous insects, table of precautions to obviate their bite, and the catalogue of remedies necessary for their cure. The author mentions fourteen species of serpents, seven species of spiders, (*phalanges*,) the lizard, (*stellio*,) cantharides, (not the *L. vesicat*, but the *meloi cichorei*,) the wasp, Egyptian godfly, besides scorpions, the bee, two kinds of millipedes, (*scolopendra*,) shrew-mouse, salamander, and a number of fishes.

In the poem upon *Theriacs* a number of new and curious observations may be found, relative to the effects of serpents' venom. The description of the *amphisbæna* is identical with that of Linnæus.

Nicander made the discovery that the poison of vipers was placed in a membrane surrounding the teeth. The division established by him between the species of scorpions, is very similar to that of modern naturalists. He made a distinction between day and night butterflies, and was the first to give to the latter the name of *phalenes*. Among the methods indicated by him for curing the bite of venomous animals, baths, external applications, and internal remedies may be noticed. The first are topical compounds of aromatic plants, bruised with wine and sometimes vinegar. As to the second, these are electuaries, more or less compounded, a strange mixture of the most incongruous substances. According to him, the best preservatives against the attacks of venomous animals, and particularly insects, is an ointment prepared from two serpents, male and female, deer marrow, oil, wax, and rose ointment.

The poem upon *Theriacs* contains about eleven hundred verses. The style of the descriptions is betimes dry and barren : it may be conceived indeed that details like these lend little to the developement of the imagination ; but when he paints the sympathies of the patient, he warms, becomes roused, and is wholly poetic. Some ingenious episodes infuse variety into the work, and agreeably divert the sight from some painful pictures.

The second poem of Nicander, which remains to us, has for its title *Alexipharmaca.** It is a continuation of the poem upon *Theriacs*. In the first the author is wholly occupied with the poisons acting externally; in the last, he is taken up with the internal poisons. He commences by enumerating the substances of the three kingdoms capable of acting as poisons; he describes the symptoms resulting from them, and then points out the proper therapeutic means to control them. Among the animal poisons he speaks of the cantharides of the Greeks, (*Milabre de la chicorée*, Fr.,)† the *Carabus auratus*, L., a kind of goldsmith, the black blood of the bullock, the rennet of the *mammiferes*, the tetraodon, (*Tetraodon lagocephalus*, L.,) the poisonous leech, and salamander. Among the vegetable poisons he described the effects of aconite, coriander,‡ cicuta, the colchicum of Illyria,§ night shade, hyosciamus, opium, and mushrooms. Lastly, in the mineral kingdom he refers to two poisons only, white lead, and litharge.

An incontestible merit of the poem upon *Alexipharmaques*, is to present a sufficiently exact exposition of the symptoms which characterise the different kinds of poisoning. The antidotes are here again topical applications, and electuaries more or less complicated. He directs as an antidote to cantharides, milk taken as a drink, and in injection, or else an emulsion prepared with hog's or lamb's brains, stirred up in a decoction of flaxseed. And to get rid of a leech that may have been swallowed, vinegar is to be drank,

* From αλεξειν, to repulse, and φαρμακον, venom. The word *Alexipharmaque* is synonymous with the words *antidote*, *counterpoison*, and *alexiteric*.

† He spake of cantharides as being suited to raise pustules upon the skin.

‡ The coriander in Egypt has sometimes excited a sort of delirium.

§ Colchicum derives its name from Colchus, where the magician Média often employed it in her enchantments.

or else salt water with a touch of ice in it. In general he chose his counterpoisons from amongst the tonics, aromatics, and heating substances with which he associated sudorifics. In some cases he began by vomiting, at other times he employed purgatives, such as scammony, sweet wine, olive oil, and hellebore. Nicander was engaged in every branch of natural history, but generally showed himself rather the poet than the naturalist.

Notwithstanding the fables and popular opinions with which his writings abound, they exhibit useful documents of the Materia Medica of his time, and they may be regarded as one of the most curious and authentic monuments of the therapeutics of Greece, their form having preserved them from alteration. Several scholiasts, however, have applied themselves to the two works which remain of him.

C. L. Cadet has made the *Theriaques* and *Alexipharmaques*, the object of an interesting and witty dissertation.*

According to Springel the Empirical School had the glory of reviving the study of the natural sciences, and plucking the Materia Medica out of the contempt into which the preceding school had suffered it to fall. Its followers did one thing useful, and showed themselves possessed of the true genius of medicine, in preferring experience to imaginary theories; but they were wrong to open the career to the abuse of polypharmacy, a field entered upon deeper and deeper by the successive schools.

With Nicander terminates the history of the Alexandrian School. The Romans, conquerers of Mithridates, heirs of the Kings of Pergamus,—Greece subjugated and bereaved of her philosophers,—Egypt abandoned by her savants, and delivered up to civil war;—such are the causes of the rapid downfall of this school, the broken wrecks of which we shall see transported to Italy, and under the name of

* Inserted in the *Bulletin de Pharmacie*, vol. ii. p. 337.

Methodical School, in the following century, again form the superstructure of the natural sciences, physical and medical.

ART. XIV. ON THE PREPARATION OF UNGUENTUM SABINÆ. By. J. Toller.

Permit me, through the medium of your Journal, to convey to Pharmaceutists a caution against preparing the ceratum sabinæ in copper vessels, a practice I am authorized in believing to be very general, from the uniformity of the *peculiar* green color which the cerate constantly presents, as well as from having ascertained that this is due to a salt of copper, formed during the preparation of the cerate. Its presence is readily evidenced by any of the usual tests of this metal.

When the cerate is prepared in a porcelain vessel, by means of the water-bath, it is of a yellowish green, and has not so much of the odor of the plant, but it is equally powerful and efficient; it keeps much longer, without change of color, or becoming rancid.

Lond. Pharm. Journ. and Trans.

ART. XV.—REPORT MADE TO THE ACADEMY OF SCIENCES, PARIS, ON THE NEW PROCESSES INTRODUCED INTO THE ART OF GILDING BY MR. ELKINTON AND M. DE RUOLZ.* By M. DUMAS.

THE importance of this report and of the numerous applications mentioned in it, induces us to give our readers such an extract as may enable them to obtain the principal results mentioned.

1. *Gilding of Brass and Silver by the Mercurial Process at present in use.*

After having carefully scoured the piece, an amalgam of gold is applied to it, then it is burned. The mercury in evaporating leaves the gold on the surface of the object to be gilded; but, in this process, the workmen being incessantly exposed to the contact of liquid mercury or of the vapor of mercury, experience in the highest degree the fatal effects of poisoning by mercurial emanations.

2. *Gilding by the Humid Way.*

This process of gilding, which is very simple in practice, consists in dissolving gold in nitro-muriatic acid, which converts it into perchloride; in mixing the latter with a great excess of bicarbonate of potass, and boiling the whole for a very long time. Pieces of brass, bronze or copper, previously well scoured, are steeped in the boiling liquor, and the gilding is immediately applied, a portion of the copper of the piece being dissolved to replace the gold which is precipitated.

Mr. Wright, in a note addressed to the Academy, gives the following explanation of this process: according to him,

* Abridged from the *Comptes Rendus de l'Academie des Sciences.*

the perchloride would not answer the purpose of gilding, and the protochloride produces the best effects; the long boiling of the perchloride with bicarbonate of potassa causes it to pass to the state of protochloride, on account of the organic matters which the bicarbonate contains. When the organic matters are not present, the operation only very difficultly succeeds; but these matters, which are only accidentally present, may easily be substituted by adding to the liquor, sulphurous acid, oxalic acid, or oxalate of potassa, which quickly reduce the perchloride of gold to the state of protochloride.

The committee of the Academy considers this opinion of Mr. Wright to be correct, and regards the liquid to be employed in gilding by the humid way, as essentially formed of a compound of protochloride of gold and chloride of potassium, dissolved in a liquid impregnated with carbonate, and even bicarbonate of potassa.

The proportion of gold deposited in gilding by the humid way is much less considerable than by the dry way. The committee has ascertained that the best gilding by the humid way fixed at the most 0.0422 gr. of gold per square decimetre, while the smallest deposition by means of mercury fixed at least 0.0428 gr.

3. *Mr. Elkington's Galvanic Process.*

Mr. Elkington takes 31 grammes 25 centigrammes of gold converted into oxide, 5 hectogrammes of cyanuret of potassium, and 4 litres of water, and boils the whole for half an hour, when it is ready for use. When boiling it gilds very quickly, and when cold, very slowly. In both cases, the two poles of a constant battery are plunged into the solution, the object to be gilded being attached to the negative pole at which the metal of the solution is deposited.

In the experiments made by the committee, on Mr. Elkington's process, brass, copper, and silver were gilded.

By this process, the thickness of the layer of gold may

be augmented at will, and the thickness may be estimated by the duration of the immersion.

4. *Galvanic Process of M. de Ruolz, for the application of a great number of Metals to other Metals.*

Gilding.—For applying gold, M. De Ruolz employs a constant battery; but he used such a variety of solutions of gold, that he found cheaper and more convenient ones than those of Mr. Elkington. Thus, he made use of cyanuret of gold dissolved in the simple cyanuret of potassium, in the yellow ferrocyanuret, and in the red ferrocyanuret of that metal. He also employed the chloride of gold dissolved in the same cyanurets, the double chloride of gold and potassium dissolved in the cyanuret of potassium, double chloride of gold and sodium dissolved in soda, and, finally, sulphuret of gold dissolved in the neutral sulphuret of potassium.

Even chemists must be astonished that the last of all these processes,—that which is based on the employment of the sulphurets,—is the most convenient, and that, applied to the gilding of metals, such as bronze and brass, whose sensibility as regards sulphuration is well known, it succeeds wonderfully, giving the finest gilding and of the purest tone.

Jewellers will derive great benefit from this process, but science will also gain much advantage. Thus, in future, there will be no obstacle to gilding, at a cheap rate, all the copper instruments which so rapidly corrode in our laboratories; we may procure tubes, capsules, and crucibles of gilded copper, which will be good substitutes for vessels of gold, which are sometimes necessary, and which no chemist of the present day possesses.

Among the pieces laid before the Academy, there is a gilded brass capsule, which has very effectually resisted the action of boiling nitric acid.

Steel and iron are very well and solidly gilded by this

method, which bears no comparison, in this respect, with the very imperfect processes of gilding on iron and steel. Only, as iron has little affinity for gold, the process is commenced by putting on the iron or steel a cupreous pellicle, which favors the adherence of the gold, and fulfils the office of what is called in dyeing, a mordant. Desert knives, surgical instruments, arms, and laboratory utensils may receive this layer of gold with economy and facility.

Silvering.—All that we have said with regard to the applications of gold, applies with equal force to those of silver. M. De Ruolz has likewise been able, by means of silver dissolved in cyanuret of potassium, to apply it with the greatest ease.

Silver may be applied to gold and platinum, and also to brass, bronze and copper, in such a manner as to substitute plating. Tin, iron and steel are also easily silvered; for the use of chemists, we have proved that a capsule of brass silvered over, may answer the purpose of a silver one, to the extent of resisting the fusion of hydrate of potassa. It will not be uninteresting to look forward to the application of these new processes to the preservation of balances, physical instruments, household utensils, those employed by confectioners and druggists, in the preparation of food or medicine containing acid, if iron or cast iron be required. These metals, fashioned into covers, (dish-covers?) and covered with a layer of silver, will favor the popular use in France, on account of their cheapness, of objects already common in England. Many covers of silvered iron are already made, by other more expensive and much less perfect processes, at Birmingham, and are in common use in many families in England.

Platinising.—By making use of the double chloride of platinum and potassium, dissolved in caustic potassa, a liquor is obtained which allows of platinising with the same facility and promptitude as in gilding or silvering.

Chemists will find, in this process, a means of procuring

large capsules of platinised brass, which combine cheapness with the necessary resistance to saline or acid solutions.

Armorers will turn to account, under different forms, this means of preserving oxidisable and sulphurisable metals, used in the manufacture of arms.

Platinum, thus applied, may be obtained from the crude solution of platinum ore, as the metals which accompany it do not injure the effect. This process reduces the price of platinum to that of silver, and seems to open for platinum, now but little employed, an unlimited sale, particularly in the manufacture of chemical products, and in the concentration of acids (especially sulphuric acid.)

The extensibility of platinum is such, that, by the processes of M. De Ruolz, 1 millegramme of platinum is capable of uniformly covering a surface of 50 square millimetres; which corresponds to a thickness of $\frac{1}{100000}$ of a millimetre, analogous, as is evident, to the most attenuated pellicle of which we can form a just idea by direct observation.

Coppering.—The same process is used as for silvering, namely, by means of cyanuret of copper dissolved in the alkaline carbonates ; but the precipitation of copper is more difficult than that of the precious metals.

Leading.—By acting on the solution of oxide of lead in potassa, by means of the pile, iron plate, iron, and all the metals in general are leaded.

The manufacture of chemical products will also be benefitted by this discovery, in thus obtaining iron boilers lined with lead, and in which the solidity of the iron is united with the resistance of lead to the chemical actions of saline solutions and weak acids.

Tinning.—The new processes may be extended in applications, by giving an easy and prompt means of tinning

copper, bronze, brass, iron, and cast iron itself, by operating without heat, on all kinds of utensils.

Cobalting, Nickeling, &c.—M. Dumas exhibited to the Academy several pieces of metal covered with nickel or cobalt. Nickel is very readily applied to iron, which may become of great importance.

Zincing.—Among the experiments tried by M. De Ruolz those which refer to the zincing of metals, and of iron in particular, were very interesting to the committee.

Zinc, when applied to iron, doubly preserves it; it protects it like a varnish, and likewise by a galvanic action. This peculiarity accounts for the success which zinced iron has obtained in all the applications in which iron, or iron plate employed cold, did not require all their tenacity, and could support additional expense.

The zincing of iron, made by steeping iron in a bath of melted zinc, has some inconveniences; besides, the iron combining with the zinc, constitutes a very brittle superficial alloy; the iron loses its tenacity, a circumstance which is not perceived, however, except in trying to zinc fine iron wire or very thin plates. Besides, the surface, thus covered with a layer of a not very fusible metal, is always ill-formed.

Thus, by this process fine iron wire cannot be zinced; it would become fragile and deformed: bullets cannot be zinced, as they become misshapen and no longer of the same calibre.

Manufacturers, and those concerned in military affairs and the fine arts, will learn with interest that the processes of M. De Ruolz enable us to zinc, in an economical manner, iron, steel, and cast iron, by means of the pile, with the solution of zinc; by operating without heat, and consequently not interfering with the tenacity of the metal; by applying it in thin layers, and by thus preserving the general forms of the pieces, and even the appearance of their minutest details.

The thinnest plate may receive this preparation without becoming brittle, and may thus be turned to account in roofing buildings.

The committee wished to ascertain that cast iron, and bullets in particular, might be zinced. This application must excite the attention of the ministers of war and marine, especially the latter, for bullets are so rapidly altered at sea, that their dimensions are very soon modified to an extent injurious both to the justness of the tier, and the duration of the pieces. The committee laid a zinced bullet on the table of the Academy.

The Chemist.

ART. XVI.—PLASTER OF CROTON OIL.

By M. Bouchardat.

Croton oil acts as a valuable repulsive in many cases. Applied to the skin, it produces a very considerable vascular eruption, but much less painful than that of the pustules caused by the employment of stibial tartar under the form of frictions. It is usually prescribed pure, or mixed with oil of sweet almonds. This means of administration is inconvenient; for crotonic acid, the active principle of the oil, is volatile, and is often dissipated without producing any effect, or else causes inflammation of the skin of the fingers used in rubbing. To avoid these inconveniences, M. Bouchardat prepares croton oil in the following manner:—

He melts, on a gentle fire, 80 grammes of diachylon plaster, and mixes with this semifluid plaster, 20 grammes of croton oil; he then spreads the plastic mass on calico, so

as to obtain a very adhesive croton oil plaster, which causes a powerful irritation of the skin.

M. Caventou, in a note in reply to M. Bouchardat's Memoir, wished to establish his right to the propagation of croton oil as a therapeutical agent. He thinks that the heat to which the oil is submitted at the time of mixing must injure its properties, which would be true if M. Bouchardat did not add the croton oil to the liquefied and partially cooled plaster. M. Caventou prefers the following formula:—

℞.		
	Hog's lard	2½ parts
	Wax	½ part.
	Croton oil	1 part.

The wax and lard are melted together, and the croton oil is incorporated when they are cold.

Ibid, from Bulletin de Therapeutique.

ART. XVII.—ON RESIN OF GUAIACUM.

By M. Deville.

Resin of guaiacum gave, by distillation, three distinct substances:—

1. An oil boiling at 117° C.
2. An oil boiling at 212° C., more dense than water, while the other is lighter.
3. A crystallised substance, volatile without decomposition.

This work, whose results would appear, at first sight, to have great analogy with those which I have published con-

cerning balsam of tolu, made me hope that I might find in these two resins, analogous, if not the same principles. Knowing that several chemists are now studying guaiacum, and being desirous of preserving priority for investigations long since commenced with regard to all the resins, and guaiacum in particular, I have communicated these results, although incomplete, in the hope that I shall very soon terminate them and submit them to the Society.

M. Pelletier informed the Society that he also was engaged in the examination of guaiacum, and that he discovered in that substance the presence of two resins, one of which was capable of combining with the alkalis, while the other did not possess this property. Having submitted guaiacum to distillation, he obtained, like M. Deville, three different substances:—

1. A light oil.

2. A crystallisable matter, perfectly clear, which volatilises with the aid of steam.

3. A dense oil, which appeared to him identical with creosote.

Ibid, from Trans. Société Philomatique de Paris.

MINUTES OF THE PHARMACEUTICAL MEETINGS.

January 2d, 1843.

Professor CARSON in the Chair.

The minutes of the preceding meeting were read and adopted.

Reports of Committees being in order, Augustine Duhamel, on behalf of the committee to whom was referred the subject of an adulteration of Jalap, read their report, (see January No. of this Journal.)

The report was adopted.

Dr. Carson observed that he had subjected some of the false jalap to microscopical observation, and that its powder was very similar to that of the true jalap.

The committee to whom was referred the paper on Extract of Senega, reported in favor of its publication, and their report was adopted.

The commissions charged with the examination of the Essays of Augustine Duhamel, on "Fuligokali and Anthrokokali," and on "Beaked Hazel," recommended their publication, which was approved.

Henry W. Worthington exhibited a specimen of the black oleaginous juice, contained between the outer and inner shells of the cashew nuts, (Anicardium occidentale,) so well known in the West Indies for its irritating qualities.

He stated that it had been extracted from the bruised nut by ether, by the subsequent evaporation of which the juice was obtained. He had suffered seriously from its effects, and could corroborate the statements of writers on th subject.

Dr. Carson observed that a formula for Syrup of Pipsissewa was much wanted, and invited the attention of the

members to the subject, with a view of eliciting correct directions for its preparation.

Dr. Bridges called the attention of the meeting to the apparatus of Dr. J. K. Mitchell, of this city, for obtaining carbonic acid in a liquid state. After some observations relative to the mode of using the instrument, Dr. Bridges observed that he had previously prepared a quantity of the liquid carbonic acid, for the purpose of exhibiting the process of obtaining it in a solid form by means of an additional instrument. The members were gratified by inspecting the solid acid, together with a quantity of mercury which had been solidified by a mixture of the acid and ether.

February 6th, 1843.

Professor BRIDGES in the chair.

The journal of the last meeting was read and adopted.

The Journal de Chimie Medicale for December and November, 1842, the Pharmaceutical Journal for October and November, 1842, and the American Journal of Pharmacy for January, 1843, were presented to the meeting.

William Procter, Jr., in accordance with the request of Dr. Carson at the last meeting, offered the following formula for Syrup of Pipsissewa, viz.:

Pipsissewa, four ounces.
Sugar, twelve ounces.
Water, a sufficient quantity.

Macerate the Pipsissewa, finely bruised, in eight fluid ounces of water for thirty-six hours, and then subject it to displacement, until one pint of fluid is obtained. Reduce this by evaporation, to eight fluid ounces, add the sugar, and form the syrup in the usual manner.

The coriaceous character of the leaves requires that they should macerate for a length of time, to be completely permeated by the menstruum.

One fluid ounce of this preparation contains the strength of two drams of Pipsissewa.

Dr. Carson exhibited a colored drawing of the Balsamodendron myrrha, copied from the work of Nees Von Esenbeck.

Henry W. Worthington called the attention of the meeting to a specimen of "pills of protoiodide of iron," and the formula for their preparation. This formula is composed after that of Dupasquier, but the pills contain a greater percentage of the ferruginous iodide, and is as follows, viz.:

Take of Iodine,	ʒij.
Iron filings,	ʒij.
Water,	ʒij.
Honey,	ʒss.
Tragacanth,	ʒiss.

Add the iodine and iron filings to one fluid ounce of the water, and let it stand, with occasional agitation, until the fluid has acquired a slightly greenish color, then filter, and add the honey, and subsequently the Tragacanth formed into a paste, with the remaining water. Mix them intimately together, evaporate to a pilular consistence, and divide the mass into one hundred and twenty pills. These pills, when well prepared, should at first be nearly colorless and translucent. Each pill contains one grain of iodine united to its equivalent of iron.

Ambrose Smith exhibited a specimen of crystals obtained from rectified oil of turpentine, in which they had probably been formed by the absorption of oxygen. They melted, and wholly sublimed without change, when subjected to heat. He further directed the attention of the members to an improved Daniell's Battery.

Dr. Bridges observed, that in connection with the subject of Mr. Worthington's remarks he would state, as the result of some experiments, that the officinal solution of iodide of iron, which so frequently becomes dark colored, owes that color in great measure to some change which the coloring matter of the honey undergoes. He found that by

agitating a claret colored solution of the iodide (which had been long standing) with iron filings, but a slight change was produced in its color, but when it was treated with animal charcoal in the same manner, it was deprived of nearly the whole of its dark hue, thus proving that the change of color was *not* due to the decomposition of the iodide of iron.

Dr. Bridges further stated that two specimens of the preparation, one made in 1840 and the other early in 1842, yet retained their light color, which he considered attributable to the purity of the honey employed in their preparation, the first having been decolorized by animal charcoal, and the second formed with very pure white honey.

William Procter, jr. presented a specimen of *amygdaline*, which he had obtained from peach kernels; and by means of a solution of *emulsine*, prepared from sweet almonds, exhibited the reaction between the latter substance and amygdaline, with the consequent production of oil of bitter almonds, hydrocyanic acid, etc.

Augustine Duhamel read an interesting essay on the History of Pharmacy during the classic ages, the whole constituting a chapter of Cap's History of Pharmacy, recently published in France, and which he had translated.

Being no further business, the meeting adjourned.

March 6th, 1843.

Professor BRIDGES in the chair.

The minutes of the preceding meeting were read and adopted.

The Journal de Chimie Medicale for January, 1843; the Pharmaceutical Journal for December, 1842, and January and February, 1843; and six numbers of the Journal of the Franklin Institute, were presented to the meeting.

Dr. Bridges, on behalf of George W. Merchant, Pharmaceutist, of Lockport, New York, presented the following specimens of minerals and fossils, viz.:

1 Specimen of Fibrous Sulphate of Strontia.
1 " anhydrite.
3 " selenite.
1 " selenite and granular sulphate of lime.
2 " dogtooth spar.
3 " " and magnesian carbonate of lime.
2 " magnesian carbonate of lime.

Fossils.

1 " fucoides Alleghaniensis.
5 " trilobites.
1 " ecrinites?
5 " miscellaneous.

On motion of Augustine Duhamel it was, resolved, that the thanks of the College be presented to the donor, for his handsome and valuable contribution to the cabinet of the institution.

Joseph C. Turnpenny, on behalf of Thomas J. Husband read an interesting paper on syrup of sarsaparilla, which was referred to William Procter, jr., Augustine Duhamel, and Ambrose Smith as reporters.

Augustine Duhamel presented a specimen of hydriodated opodeldoc, containing one dram of the alkaline iodide to the ounce; and also a sample of syrup of Pareira brava, containing two ounces to the pint.

Dr. Carson exhibited a drawing of the Dryobalanops camphora, together with specimens of the camphor it yields, and the volatile oil from which the camphor is deposited in the cavities of the tree.

A specimen of Phloridzine, the bitter principle of apple-tree bark, was presented to the meeting by Dr. Bridges, on behalf of William Procter, jr., not present.

Some observations on the opodeldoc of the U. S. Pharmacopœia, were made by Augustine Duhamel, who suggested

the appointment of a committee to investigate the subject; which was referred for future action.

On motion, the meeting adjourned.

April 3d. 1843.

Dr. BRIDGES in the chair.

The minutes of the last meeting were read and adopted.

Reports of committees being in order, William Procter, jr., on behalf of the commission appointed at the last meeting to consider the paper of Thomas J. Husband, read their report; which was accompanied by the products resulting from the experiments contained in the report. After due consideration of the report and attached specimens, it was adopted.

William Procter, jr. called the attention of the meeting to specimens of ointment of extract of nutgalls, and of the extract itself, prepared by Daniel S. Jones, a recent Graduate of the College. He stated that nutgalls when treated with water by the displacement process, yield 63 per cent. of dry extract, about two-thirds of their weight, and proposed an ointment formed by triturating two scruples of the extract of galls, with a little water, and afterwards with seven drams of lard as a substitute for the officinal ointment made with ordinary powdered galls.

When thus made, this ointment embodies all the activity of the nutgalls, without that gritty, uneven character of the ordinary ointment, due to the uneven division of the powder, and which amounts to an objection to its use in some cases of extremely irritable hemorrhoids.

The ointment possessed a perfectly uniform consistence, but was objected to as being too soft. Simple cerate was proposed as a substitute for lard. In the ordinary ointment, the dry bulky nature of the powdered galls compensates for the softness of the lard. In other respects

the proposed ointment was approved of as an efficient and eligible preparation.

A specimen of urea, and its nitrate and oxalate, were presented to the meeting by William Procter, jr., made by the formula of Liebig.

The suggestion offered at the last meeting, which was postponed for the action of this meeting, was again referred for future consideration.

On motion, adjourned.

MISCELLANY.

Detection of the presence of Potato Starch in the Powder of Rice or Arrow-root, by means of Diluted Hydrochloric Acid. By M. SCHARLING.—If powdered rice or potato starch be mixed with concentrated hydrochloric acid, in the proportion of about one part of the former to one and a half or two parts of the acid, they form almost immediately a thick mucilage. The mucilage of potato-starch is nearly transparent; that of the rice, on the contrary, is opaque. They both emit the odor of formic acid.

If a mixture of hydrochloric acid and water be used, a very different action is exercised on the two substances already named. The potato starch forms, in a very short time, a mucilage so thick, that the morter may be lifted up by means of the pestle used in making the mixture; while the powdered rice does not acquire a similar viscosity in less than twenty-five or thirty minutes. If the rice-powder contains from four to six per cent. of potato-starch, it is easy to detect the admixture by means of this re-agent. For this purpose a mixture of equal parts of hydrochloric acid of commerce and water should be used.

Arrow-root comports itself in the same manner as rice-powder, with the hydrochloric acid, while wheat-starch resembles potato-starch in this respect.

M. Marezeau, as is known, has proposed hydrochloric acid as a means of detecting potato-starch in flour, by the strong smell of formic acid which it developes in contact with the acid; but as the same effect is produced, in this respect, with rice-powder and arrow-root as with potato-starch, the hydrochloric acid cannot be used in this way for detecting the admixture of these latter.—*Pharm. Journ. and Trans., from Analen der Chemie und Pharmacie.*

On the Danger of Keeping Milk in Vessels of Zinc. By DR. ELANES, of Berlin.—I scarcely could have believed that zinc vessels could again have come in use for keeping any fluids used for alimentary purposes. as Vauquelin proved, forty years ago, that such will contain,

after a short time, a considerable quantity of zinc in solution. I have found, by experiment, that a solution of sugar, which had stood only a few hours in a zinc vessel in the summer, contained a considerable amount of zinc salts. It has been often stated, that the cream will separate more easily from milk if the latter be kept for a short time in zinc vessels. As, however, it is known that milk will become much sooner acid than a solution of sugar, it is the more to be apprehended that some zinc will be dissolved, and such milk will be the more noxious, as it is well known that even a small amount of zinc will cause violent spasmodic vomiting.—*Ibid, from Gewenb-blatt fur Sachsen.*

New Method of Preparing Cinnamic Acid. By Mr. G. HEAVER.—Having recently had occasion to prepare, amongst other chemical products, a quantity of cinnamic acid, and finding that Turner's process for making it from oil of balsam of Peru, was a tedious and expensive operation, and that the product was exceedingly small in proportion to the quantity of balsam employed, I was led to make some experiments with a view of preparing this acid more economically. This I soon found might be effected by distilling genuine balsam of Tolu, the price of which is now very low. On subjecting this article to a gentle heat in a retort, it fuses, and a little water and fragrant volatile oil first come over; these are succeeded by the cinnamic acid, which distils over in the form of a heavy oil, condensing in the cool part of the neck of the retort into a white crystalline mass. This gradually becomes contaminated with an empyreumatic oil, that rises towards the end of the operation. The acid may be freed from this oil by pressure between folds of filtering paper, and afterwards dissolving in a large quantity of boiling water, from which it deposits, on cooling, in minute colorless crystals.

This process is very productive, so much so, that the balsam of Tolu I employed, yielded an eighth of its weight of pure acid—minus a few grains.—*Ibid, from Annals of Chemistry and Practical Pharmacy.*

Mezereon Cerate.—The following formula is given by Mr. Pleischl for the preparation of this cerate.

Digest the fresh bark of mezereon, collected at the period of inflorescence of the plant, in spirit of wine, for two or three days; pour off the liquor and add fresh spirit, repeating this process until the bark is exhausted of its soluble parts. Mix the liquors thus obtained together, and submit them to the action of hydrate of lime, prepared with three parts of water to one of quick lime. The hydrate of lime should be used in the proportion of one part, by weight, to three parts of meze-

reon. Digest these together until the color becomes a yellowish green, then distil off the greater part of the spirit. Add water to the residue, when a green substance of a soft consistence will be separated, and one part of this is to be mixed with four parts of yellow wax, and eight parts of olive oil, to form the cerate.—*Ibid, from Buchner's Repertorium.*

Application of the Residue of Iron Pyrites, employed in the Manufacture of Oil of Vitriol. By M. Berrael.—The manufacture of oil of vitriol from iron pyrites, in the countries in which this substance is abundant, being advantageous in a commercial point of view, it is important to discover a profitable application for what has hitherto been considered as the refuse of the process.

In a manufactory in Belgium, where sulphuric acid, and also soda is made, the residue left after burning the pyrites, and which contains sulphate of iron, is mixed with sea salt in excess, and heat applied in a proper apparatus; hydrochloric acid is thus obtained, and sulphate of soda, which is purified by solution and crystallization. The remaining peroxide of iron is separated, by washing, into two parts: that which is in the finest powder, being dried and mixed with grease, is used as an antiattrition for machinery, and answers the purpose well; the coarser powder is made into small pellets, dried and treated as iron ore.

In manufactories where soda is not made in connection with sulphuric acid, instead of extracting the sulphate of iron from the burnt pyrites, it is found more advantageous to distil the residue (the sulphate of iron being already dry) so as to obtain the fuming acid.

It is easy to arrange the apparatus in such a manner, that the sulphurous acid resulting from the decomposition of a part of the sulphate during the distillation, may be conducted into the leaden chambers. Nothing is lost in this process, the residue being obtained in the state of colcothar.—*Ibid, from Comptes Rendus.*

Tests for Phosphorous Acid. By M. Wohler.—Some phosphoric acid, when examined to ascertain whether it contained arsenic, gave by heat, with sulphurous acid, a yellow precipitate of sulphuret of arsenic. This phosphoric acid contained, as was shown on a more attentive examination, arsenious and phosphorous acids.

It was seen, indeed, that phosphorous acid possesses the property of being converted into phosphoric acid by the action of sulphurous acid, especially when aided by heat. This transformation is caused by the decomposition of the water; and there is a formation of sulphuretted

hydrogen, and a reciprocal decomposition of this sulphuretted hydrogen and the sulphurous acid into water and sulphur.

If phosphorous acid be mixed with a solution of sulphurous acid in water and heated, an abundant precipitate of sulphur is immediately formed. It is a very good means of discovering whether phosphoric acid contains phosphorous acid, as is often the case: if it contains arsenious acid at the same time, it turns yellow on the precipitation of sulphuret of arsenic.

The presence of phosphorous acid is very easily detected by means of a small gas apparatus, similar to Marsh's. Indeed, if phosphoric acid containing phosphorous acid be mixed with a liquid disengaging hydrogen gas, phosphoretted hydrogen is formed, which may be recognized by its smell alone; and if this gas be inflamed, it burns with a whitish, brilliant flame, very different from that of pure hydrogen gas. If this flame be directed against a porcelain plate, there is always remarked, and in a very evident manner, especially if the place be not too light, a circle of green light in the flame thus spread out, as when phosphorous burns in confined air or in chlorine.

Chemist, from Journ. de Pharm.

Crystals of the Essences of Turpentine and Citron. By M. Deville.—M. Deville presented to the Philomatic Society of Paris, at its meeting of the 27th of November, 1841, two new products which he had recently obtained under the form of crystals, remarkable for their beauty, transparency, and lustre.

The first was hydrated essence of turpentine, and the second, essence of citron.

He read the following observations on this subject:—

Mr. Wiggers announced that he had obtained fine crystals of the former substance by means of a mixture of alcohol, nitric acid, and essence of turpentine. I have repeated this experiment, which perfectly succeeded, and I obtained two or three hundred grammes of substance at the end of a month of contact between two kilogrammes of the mixture. In an analogous manner, I was able to prepare the hydrated essence of citron, not previously known.

These two substances crystallise with remarkable distinctness. They are isomorphous, and their forms are right rectangular prisms. They are likewise isomeric, and their formula is $C^{40}\ H^{32} + H^{12}\ O^6$, a formula which Dumas and Peligot had already assigned to hydrated essence of turpentine.

It appeared to me that there should also exist a liquid hydrate of the two essences.

Terebene, in the same circumstances, furnished a crystallised body. I have not yet obtained it in sufficient quantity for examination.

All these experiments, which have been commenced on a great number of essences, require a considerable time before they can be concluded. It is for this reason that I now introduce them to the notice of the Society, although they are yet incomplete.

Ibid, from L'Institut.

Analysis of a Substance secreted on the Hand of a Gouty Person. By O. Henry.—This substance showed itself after violent attacks of gout under the form of a very thick, glutinous secretion, and was, as it were, sprinkled with a white matter. A very small quantity examined by Henry was formed of the following matters:—

1. A large quantity of albumen, amounting to 4-5ths of the whole.
2. Lactic and phosphoric acids.
3. Chloride of sodium and phosphate of lime.
4. Evident traces of urate of soda.

Ibid, from Journ. des Connoissances Medicales.